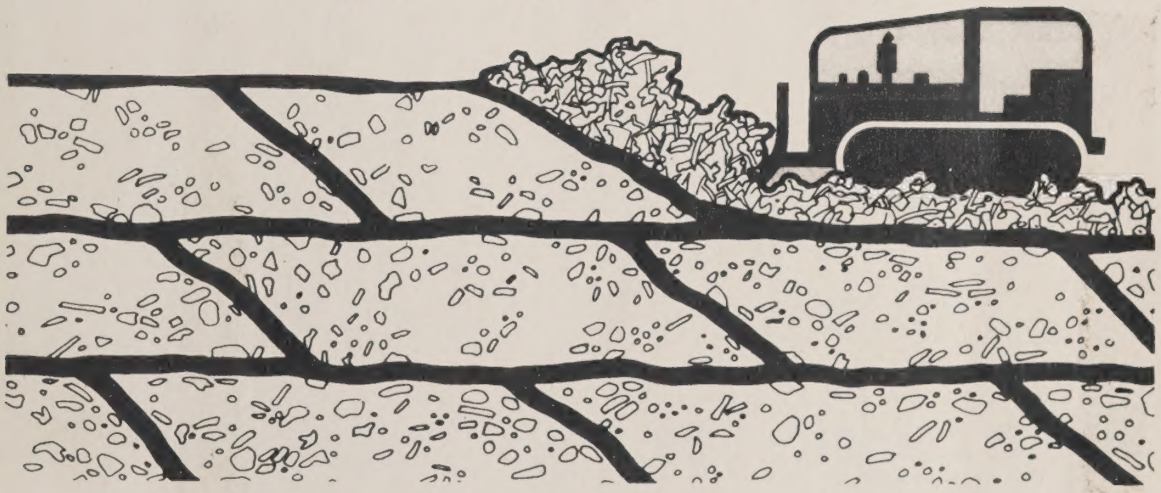
Draft
Environmental Impact Report/
Environmental Impact Statement

ACME LANDFILL EXPANSION



US Army Corps of Engineers
San Francisco District

Contra Costa County
Planning Department

TORREY & TORREY INC.
environmental/urban planning and design

This Environmental Impact Report/Environmental Impact Statement (EIR/EIS) was prepared by Torrey & Torrey Inc., San Francisco, California, to conform to the National Environmental Policy Act, Council on Environmental Quality Regulations Corps of Engineers' EIS Regulations, California Environmental Quality Act and State and County EIR Guidelines. Torrey & Torrey Inc. has used its best efforts to prepare an inclusive report by identifying and evaluating possible environmental impacts and possible measures to mitigate adverse impacts of the proposed project, and by considering alternatives to the project as proposed.

This EIR/EIS is intended to be a full disclosure document and is provided solely to assist in the evaluation of the proposed project. Torrey & Torrey Inc. shall not be liable for costs or damages of any client or third parties caused by use of this document for any other purpose, or for such costs or damages of any client or third parties caused by delay or termination of any project due to judicial or administration action, whether or not such action is based on the form or content of this report or portion thereof prepared by Torrey & Torrey Inc.

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DRAFT

ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL IMPACT STATEMENT

PROPOSED EXPANSION OF ACME LANDFILL OPERATIONS

Contra Costa County, California

Prepared for

Contra Costa County Planning Department
U.S. Department of the Army - San Francisco District - Corps of Engineers

By

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August 1982

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Acme Fill Corporation has proposed the expansion of an existing sanitary landfill operation near Martinez, California onto an adjacent 200 acre area. The proposed landfill expansion requires Department of the Army authorization under Section 10 of the River and Harbor Act of 1899 and under Section 404 of the Clean Water Act. Contra Costa County issued a land use permit in 1958 which authorizes most of the proposed landfill expansion. The County needs to determine the consistency of the proposed landfill expansion with its land use permit.

This Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) has been prepared by the Contra Costa County Planning Department and the San Francisco District, U. S. Army Corps of Engineers to comply with the environmental impact document requirements of the California Environmental Quality Act and the National Environmental Policy Act. A joint state and federal document has been prepared in order to minimize the duplication of effort in the County and Corps of Engineers permit processes.

The Contra Costa County Planning Department and the Corps of Engineers are circulating this Draft EIR/EIS to appropriate government agencies, interested organizations, and the public for review. Your written comments are requested so that they can be considered during preparation of the Final EIR/EIS. Please send copies of your comments to the Contra Costa County Planning Department or the Corps of Engineers by the date indicated on the cover sheet which follows this page.

This main text of the Draft EIR/EIS is supplemented by an Appendices volume which contains supporting information and documents. Copies of the Appendices have been supplied to regulatory agencies, and the document, along with the main text, is available for review at most libraries in Contra Costa County. Single copies of the main text may be obtained without cost by contacting Scott Miner of the San Francisco District, U. S. Army Corps of Engineers at (415) 974-0444. Copies of the Appendices volume may be obtained for $10.00 to cover printing, mailing and handling costs by contacting the Contra Costa County Planning Department at (415) 372-2026.

Thank you for your assistance in reviewing this document.

Sincerely yours,

Edward M. Lee, Jr.

EDWARD M. LEE, JR.
LTC(P), CE
District Engineer
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ANTHONY A. DEHAESUS
Director of Planning
Contra Costa County

DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT
ACME LANDFILL EXPANSION
CONTRA COSTA COUNTY, CALIFORNIA

COVER SHEET

A. ABSTRACT

The Acme Fill Corporation has applied to the U.S. Army Corps of Engineers, San Francisco District, for a permit under Section 10 of the River and Harbor Act of 1899 and Section 404 of the Clean Water Act (Public Notice No. 13881E59) authorizing expansion of their sanitary landfill facility located near Martinez, California. Acme has a land use permit from Contra Costa County authorizing landfill in most of the proposed expansion area. In order to determine consistency with the County land use permit and to provide the Corps with Environmental data to either deny or issue the permit for the expansion, Contra Costa County and the Corps of Engineers have been designated as lead agencies for the preparation of a joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The Draft EIR/EIS examines the impacts of several on-site alternatives as well as the alternative of selecting another site.

B. LEAD AGENCY CONTACTS

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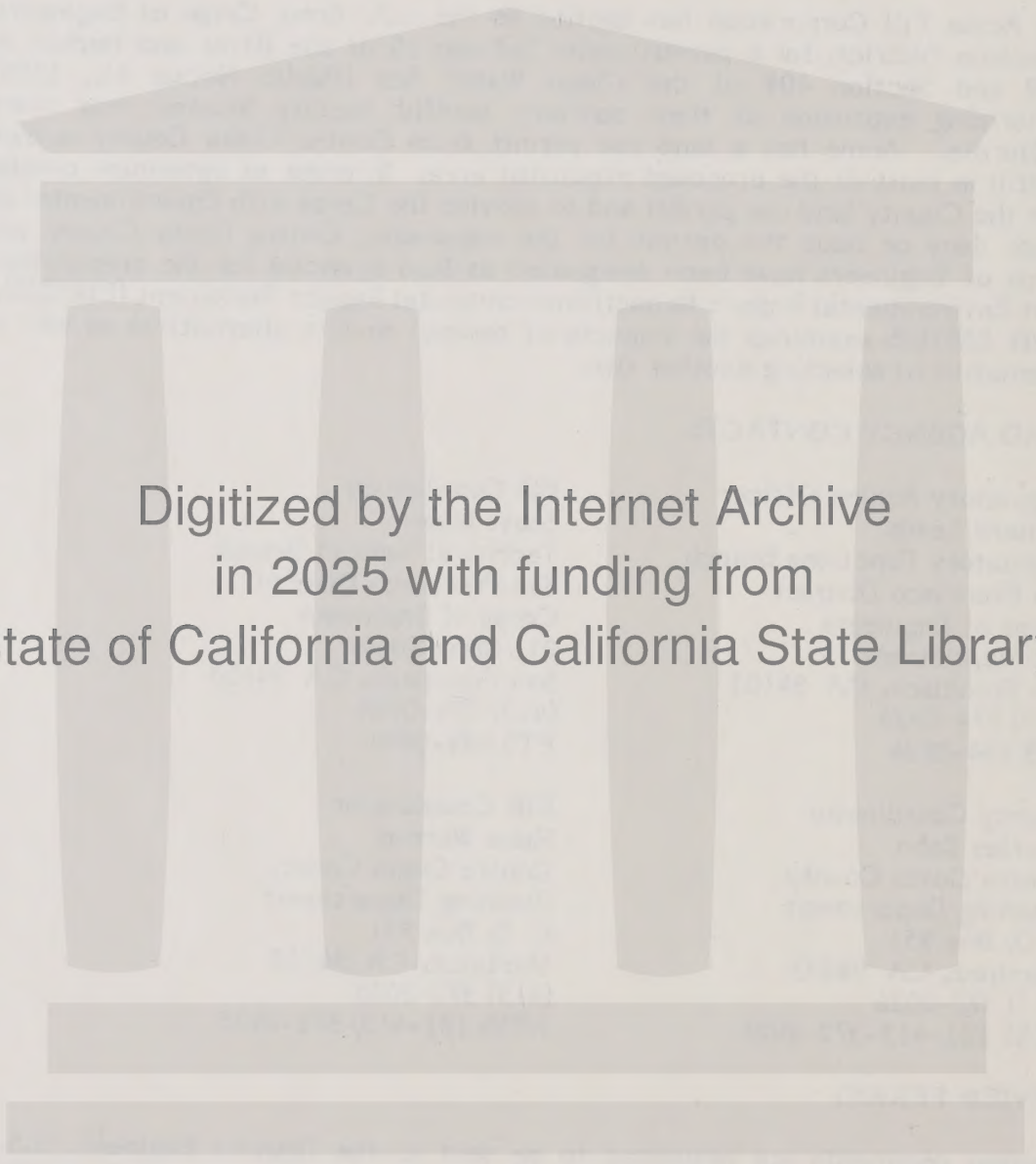
C. REVIEW PERIOD

Written comments are requested to be sent to the District Engineer, U.S. Army Engineer District, San Francisco, 211 Main Street, San Francisco, CA 94105 or the Director, Contra Costa County Planning Department, P.O. Box 951, Martinez, CA 94553, prior to a public hearing before the Contra Costa County Planning Commission at the County Administration Building, Martinez, at 7:30 p.m. on September 7, 1982. Oral and written comments may be presented at the hearing. In any event, comments must be received by SEP 27 1982 (or the end of the 45-day comment periods specified by the Notice of Availability published in the Federal Register, or in the County's Notice of Completion, whichever is later).



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GLOSSARY

Agricultural Solid Wastes - Wastes resulting from the production and processing of farm or agricultural products, including manures, prunings and crop residues wherever produced.

Alluvium - Detrital deposits resulting from the operations of modern rivers, thus including the sediments laid down in river beds, flood plains, lakes, fans at the foot of mountain slopes, and estuaries.

Aquifer - A zone well below the surface of the earth capable of producing useable quantities of water through wells or springs.

Baling - A method of reducing volume and restraining solid waste volume by mechanical compaction to achieve high density per unit volume.

Benefication - The concentration, enhancement or upgrading of waste materials in a resource recovery processing system so that they may be more readily used as secondary materials.

British Thermal Unit (Btu) - The quantity of heat required to raise the temperature of one pound of air free water from 60 to 61 degrees Fahrenheit.

Cell - Compacted waste and subsequent cover constitute a cell.

Class I Disposal Site - A waste disposal site where there is no possibility of discharge of pollutant substances to usable waters. Artificial barriers may be used for the control of lateral waste movement only. Usable groundwater may underlie the site, but only under extreme cases and where natural geological conditions prevent movement of the wastes to the water and provide protection for the active life of the site. Inundation and washout must not occur. All waste groups may be received.

Class I Disposal Site (Limited) - A special case of Class I site is established where a threat of inundation by greater than a 100-year flood exists. A limitation is placed on the type and amount of Group 1 wastes that may be accepted.

Class II-1 Disposal Site - These sites may be above or adjacent to usable groundwater. Artificial barriers may be used for both vertical and lateral waste confinement in the absence of natural conditions. Protection from a 100-year frequency flood must be provided. Groups 2 and 3 wastes can be accepted and, under special conditions, certain Group 1 materials may be accepted.

Class II-2 Disposal Site - These sites may have vertical and lateral continuity with usable groundwater but have features that provide for the protection of water quality. Group 2 and 3 wastes may be accepted.

Class III Disposal Site - These are sites where Group 3 wastes could under certain conditions be dumped directly into ground or surface water or where there is inadequate protection to water quality. Only Group 3 wastes may be

accepted. Construction practices and facilities that could cause a discharge of soil or accelerate downstream transport of soil are also considered Class III disposal sites.

Closure Plan - A plan that specifies how a disposal site will be taken out of operation once the site has reached capacity. The plan includes measures required to prevent any dangers or nuisances that may occur after the site has reached capacity, the configuration and capacity of the ultimate site, and conceptual planned uses of the completed site.

Co-generation - A method of producing electric power in conjunction with process steam or heat which utilizes the energy supplied by fuel (e.g., solid wastes) to maximize the energy produced for consumption.

Co-incineration, Co-disposal - The use of sewage sludge and solid wastes as a fuel in a waste-to-energy facility.

Combustibles - Various materials in the waste stream which are burnable, such as paper, plastic, lawn clippings, leaves and other light, organic materials.

Commercial Wastes - Waste material that originates in wholesale, retail or service establishments, such as office buildings, stores, markets, theaters, hotels and warehouses.

Composting - The natural conversion of most organic materials to humus by micro-organism activity.

Construction/Demolition Wastes - Wastes that include waste building materials, packaging and rubble resulting from construction remodeling, repair and demolition operations on pavements, houses, commercial buildings and other structures. Includes steel, concrete, glass, brick, asphalt roofing material, and lumber.

Cover Material - Soil used to cover compacted waste in a sanitary landfill.

Curbside Collection - The gathering of recyclables that have been placed at the curb.

Dredge Spoil - Material excavated from cleaning and/or deepening water course channels.

Earthquake - Groups of elastic waves propagating in the earth, set up by a transient disturbance of the elastic equilibrium of a portion of the earth. Vibration received by waves produced by sudden slippage along a fault.

Earthquake (Richter) Magnitude - The amplitude of the shock wave recorded at a standard seismograph at a distance of a 100 kilometers from the epicenter.

Effluent - Treated wastewater.

Energy Recovery - The conversion of solid waste to energy or marketable fuel. The conversion can be either from unprocessed municipal solid waste or from refuse-derived fuel.

Epicenter - Point on the earth's surface directly above the focus of an earthquake.

Expansive Soils - Soils, particularly silts and clays, which exhibit volume changes (shrink or swell) with changes in moisture content.

Fault - Fracture or fracture zone along which there has been displacement of the rocks on either side of the fault relative to each other and parallel to the fracture.

Fault Trace - A lineation or scar on the earth's surface marking the intersection of a fault with the earth's surface.

Fault Zone - A fault that is expressed as a zone of numerous small fractures or fault gouge. A fault zone may be as wide as hundreds of meters.

Ferrous - Metals which are predominantly composed of iron. Most common ferrous metals are magnetic. In the waste materials stream, these usually include steel or "tin" cans, automobiles, old refrigerators, stoves, etc.

Fly Ash - Small solid particles of ash and soot generated when burning coal, oil or waste materials. With proper equipment fly ash is collected to prevent it from entering the atmosphere. Fly ash can be used in building materials, such as bricks, or disposed of in a landfill.

Franchise - A contract which grants exclusive rights to collect municipal refuse to a successful bidder by the franchisor, which is some form of local government.

Furnace - Chamber of an incinerator where drying, ignition, and combustion occur.

Ground Rupture - A breaking or fracturing of the earth's surface along a fault during an earthquake. Also called surface faulting.

Group 1 Waste - A waste that consists of or contains toxic substances which could significantly impair the quality of usable waters.

Group 2 Waste - A waste that consists of or contains chemically or biologically decomposable material which does not include toxic substances nor those capable of significantly impairing the quality of usable waters.

Group 3 Waste - A waste consisting entirely of non-water soluble nondecomposable inert solids.

Habitat Suitability - The potential of a specific area to support a selected evaluation species.

Habitat Suitability Index (HSI) - A unitless number bounded by 0.0 and 1.0 where 0.0 represents unsuitable habitat and 1.0 represents optimal habitat.

Habitat Suitability Index Model - The rules, in either written or mathematical form, by which a Habitat Suitability Index is determined for a particular evaluation species at a particular location. The HSI model consists of two parts: a value of interest (numerator) and a standard of comparison (denominator). The denominator is a description of optimal habitat: a value of interest (numerator) and a standard of comparison (denominator). The denominator is a description of optimal habitat; the numerator is a description of habitat in the area of interest.

Habitat Units (HU) - A value derived by multiplying the Habitat Suitability Index for an evaluation species by the size of the area for which the HSI was calculated. The HU provides a standardized basis for comparing habitat changes over time and space.

Hazardous Waste - A waste or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may either:

a. Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness.

b. Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

Hydrocompaction - Settlement and collapse of foundation soils caused by wetting.

Incineration - The controlled process by which solid waste, liquid or gaseous combustible wastes are burned and changed into gases; the residue produced contains little or no combustible material.

Industrial Waste - All types of solid wastes and semi-solid wastes that result from industrial processes and manufacturing operations.

Landfill - A disposal site employing a method of disposing of solid waste on land without creating nuisances or hazards to public health or safety by using the principles of engineering to confine the waste to the smallest practical area, to reduce them to the smallest practical volume, and to cover them with a layer of suitable cover material at specific designated intervals.

Landslide - A mass movement of soil or rock debris.

Leachate - A liquid that has come in contact with or percolated through waste materials and has extracted or dissolved substances therefrom.

Lense - A geologic deposit bounded by converging surfaces (at least one of which is curved), thick in the middle and thinning out toward the edges, resembling a convex lens; e.g., an orebody having a length many times greater than its width and pinching out laterally at its extremities.

Lift - A complete horizontal series of cells.

Liquefaction - The process of saturated granular soils becoming liquid or "quick" under earthquake shaking. Under such conditions, the soil loses its bearing strength and may settle or flow toward a topographic depression or free face.

Litter - Improperly discarded waste material, including, but not limited to, convenience food, beverage and other product packages or containers constructed of steel, aluminum, glass, paper, plastic and other natural and synthetic materials, thrown or deposited on the lands and waters of the State.

Market - An individual or organization which will purchase or acquire by other means ownership of recovered waste products.

Manual Separation - The separation of waste materials by hand. Sometimes called hand-picking, manual separation is done in the home or office by keeping recyclables separate from garbage, or in a recovery plant by picking out certain materials.

Methane - An odorless, colorless, flammable gas which can be formed by the anaerobic decomposition of organic waste matter or by chemical synthesis.

Mudwave - A shear failure in which a soil mass moves in a fluid-like manner.

Nonferrous - Metals which contain no iron. In waste materials these are usually aluminum, copper, brass, bronze, etc.

Off-site Hazardous Waste Facilities - Hazardous waste facilities that are not located on the same site where the hazardous wastes are generated and are used by many different generators.

On-site Hazardous Waste Facilities - Hazardous waste facilities which manage hazardous waste on land owned by, or leased by, the waste generator and which only accept hazardous waste produced by that generator.

Open Dump - A facility for the disposal of solid waste which does not comply with the criteria set forth in the Federal Resource Conservation and Recovery Act (RCRA).

Organic Content - Synonymous with volatile solids except for small traces of some inorganic materials such as calcium carbonate, which lose weight at temperatures used in determining volatile solids.

Permeability - The property or capacity of a porous rock, sediment, or soil for transmitting a fluid. It is a measure of the relative ease of fluid flow under equal pressure.

Piezometer - Device to measure pore water pressure.

Pore Pressure - The part of the total normal stress in a saturated soil due to the pressure of pore water.

Recovered Materials - Materials which are recovered from solid waste by separation, collection, or other means to reuse for sale.

Recycling - The process of sorting, cleaning, treating and reconstituting waste or other discarded materials for the purpose of using the altered form.

Residential Waste - All types of domestic garbage and rubbish which are generated in houses and apartments.

Residue - Material that remains after gases, liquids or solids have been removed.

Resource Recovery - The reclamation or salvage of wastes for reuse, conversion to energy or recycling.

Salvaging - The controlled removal of waste material for utilization.

Sanitary Landfill - A disposal site employing an engineered method of disposing of solid wastes in a manner that minimizes environmental hazards by spreading and compacting wastes to the smallest practical volume and applying cover material over all exposed wastes daily.

Seiche - An earthquake generated wave within an enclosed or restricted body of water, such as a lake, reservoir, or lagoon.

Sewage Sludge - Any residue, excluding grit or screenings, removed from a wastewater, whether in a dry, semi-dry or liquid form.

Slope Failure - The downward and outward movement of rock or soil as a unit or series of units.

Sludge (Raw or Undigested) - Liquid and semisolid wastes resulting from the treatment of domestic wastewater. Characteristically raw sludge is high in organic content, unstable, odorous and contains a substantial population of pathogenic organisms.

Sludge (Digested) - Sludge that has been stabilized through the biological degradation of the organic components in the waste either in the presence of oxygen (aerobic digestion) or in the absence of oxygen (anaerobic digestion). As a result of the digestion process, sludge becomes less putrescible and the quantity of solids present for ultimate disposal is reduced.

Solid Waste - All putrescible and non-putrescible solid and semi-solid wastes such as refuse, garbage, rubbish, paper, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi-solid wastes, and other discarded solid and semi-solid wastes, and also includes liquid wastes disposed of in conjunction with solid wastes.

Source Separation - The segregation and collection of individual recyclable components before they become mixed into the solid waste stream.

Tectonic Creep - Deformation that occurs along a fault but is not expressed by rupture along the fault.

Tipping Fee - A fee charged to transporter of wastes to dispose of the wastes at a transfer station, resource recovery facility or landfill.

Toxic Substances - Materials that contain or have the effects of a poison.

Transfer Station - Intermediate waste handling facilities where solid wastes are transferred from hauling vehicles to a transfer vehicle and where the waste or portion thereof may undergo incidental processing, recycling or further handling before transport to a disposal site, waste processing facility or other facilities.

Tsunami - A sea wave generated by underwater ground movement, usually associated with an earthquake.

Vector - Any insect or other arthropod, rodent, or other animal capable of transmitting the causative agents of human disease, or disrupting the normal enjoyment of life by adversely affecting the public health and well being.

Waste Reduction - Reducing the total volume of waste through longer product durability, better recycling, and improved packaging and consumption.

Waste-to-Energy Projects - Facilities where the energy value of solid wastes are reclaimed through a process such as incineration with heat recovery.

Waterwall Combustion - A system using a furnace constructed with walls of welded steel tubes through which water is circulated to absorb the heat of combustion. The steam or hot water thus generated may be put to a useful purpose, or simply used to carry the heat back to the outside environment.

White Goods - Inoperative and discarded refrigerators, ranges, washers, water heaters, and other similar domestic and commercial appliances.

Sources:

[1]Contra Costa County, Solid Waste Management Plan, Draft 12/81, Revised 1/82
[2]Kleinfelder & Associates, 1982.
[3]Regional Planning Commission, Regional Solid Waste Resource Recovery Program, Jefferson, Orleans, St. Bernard, St. Tammany Parrishes (Louisiana), January 1981.
[4]U.S. Fish and Wildlife Service, Division of Ecological Services, Habitat Evaluation Procedures (HEP) ESM 102, March 31, 1982.

A. DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

Acme Fill Corporation has applied to the U.S. Department of the Army, Corps of Engineers, San Francisco District for a permit authorizing expansion of their sanitary landfill operations into an area subject to Corps jurisdiction as specified under Section 10 of the River and Harbor Act of 1899 and Section 404 of the Clear Water Act. Acme has a land use permit from Contra Costa County authorizing landfill in most of the proposed expansion area. In order to determine consistency with the County land use permit and to provide the Corps with environmental data to either deny or issue the permit for the expansion, Contra Costa County and the Corps of Engineers have been designated as lead agencies for the preparation of a joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The Contra Costa County Planning Department (the County's Environmental Agency) was designated to administrate the preparation of the EIR/EIS and conduct the review process. The federal process is being conducted by the Corps of Engineers.

The Draft EIR/EIS examines potential impacts of the proposed project and four alternatives. The proposed project is referred to as Alternative A throughout the summary and report. As the other on-site alternatives, Alternative B is a reduced landfill project and Alternative C is a landfill elsewhere on the Acme property. Alternative D is an evaluation of other methods of disposal and Alternative E is an evaluation of the relative suitability of 5 off-site areas for landfill disposal.

Exhibits A, B, and C show Acme's regional location, the project location, and aerial views of the site.

Brief descriptions of the proposed project and alternatives follow.

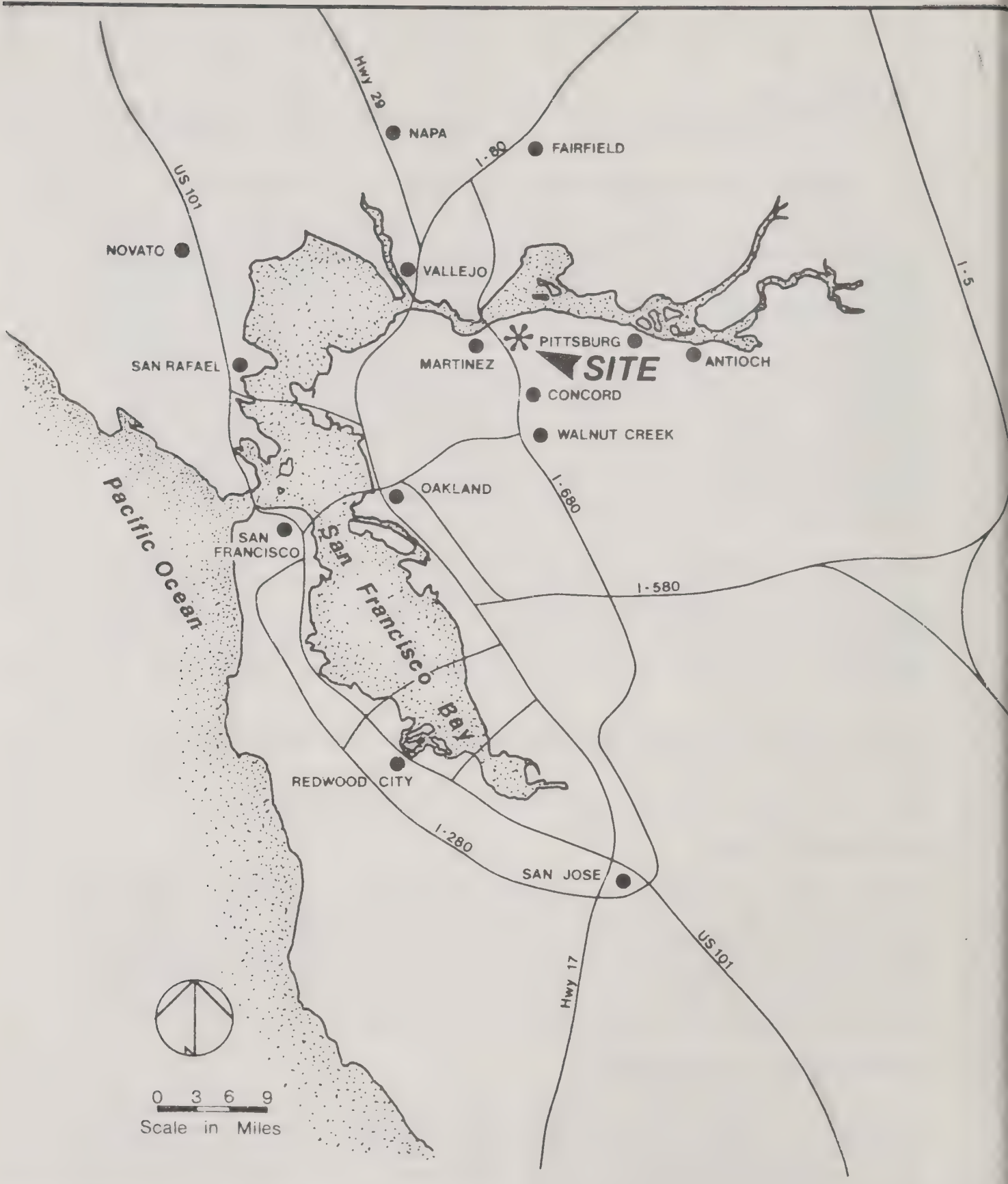
No Project Alternative

The No Project Alternative was eliminated from detailed consideration because of the need to have suitable landfill space ready to accommodate approximately 64 percent of the county's solid waste when the current Acme operational sites are complete in 1983; the improbability of having other solid waste management facilities ready in the intervening time; and the impracticality of using the other two landfill sites in the county. For these reasons, the No Project Alternative is considered neither reasonable nor feasible.

Alternative A - Proposed Project

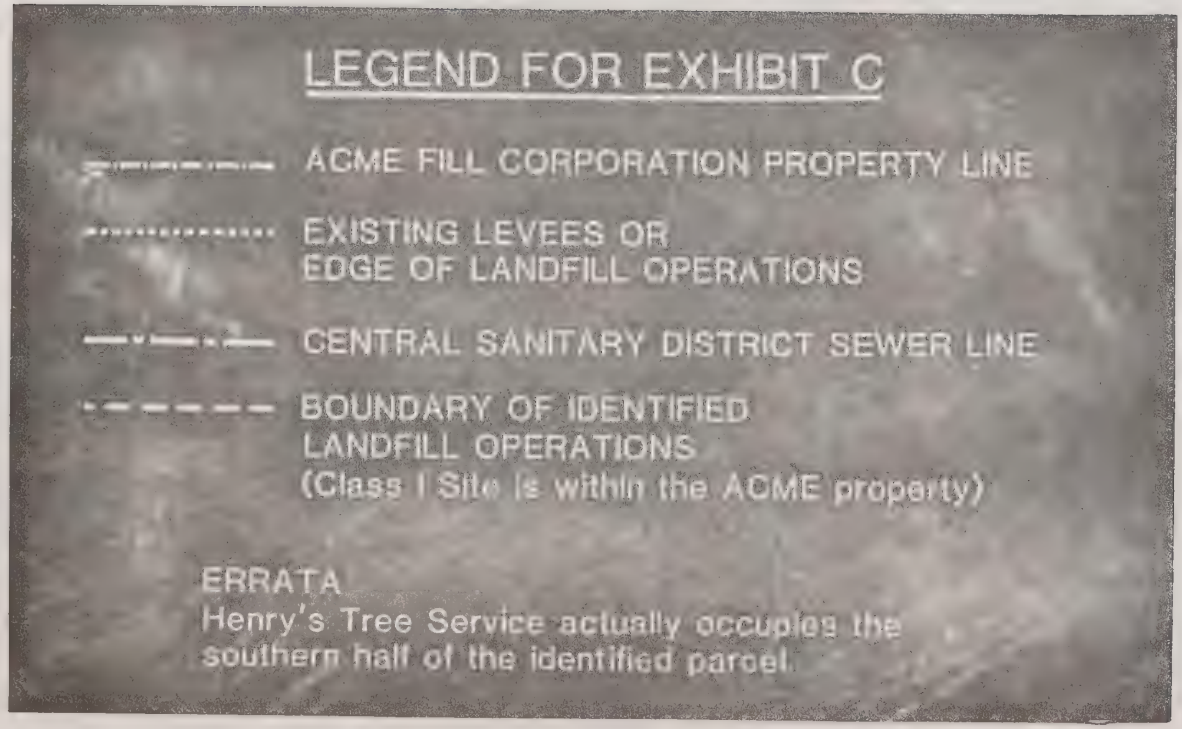
Acme Fill Corporation has proposed the expansion of the existing landfill operations at its site in Contra Costa County. (Exhibit D1) With the existing operation area approaching capacity, Acme proposes to fill an adjacent 200 acres to create additional capacity for solid waste. The proposal includes the following elements and characteristics:

1. Three bridges across the Central Contra Costa Sanitary District pipeline



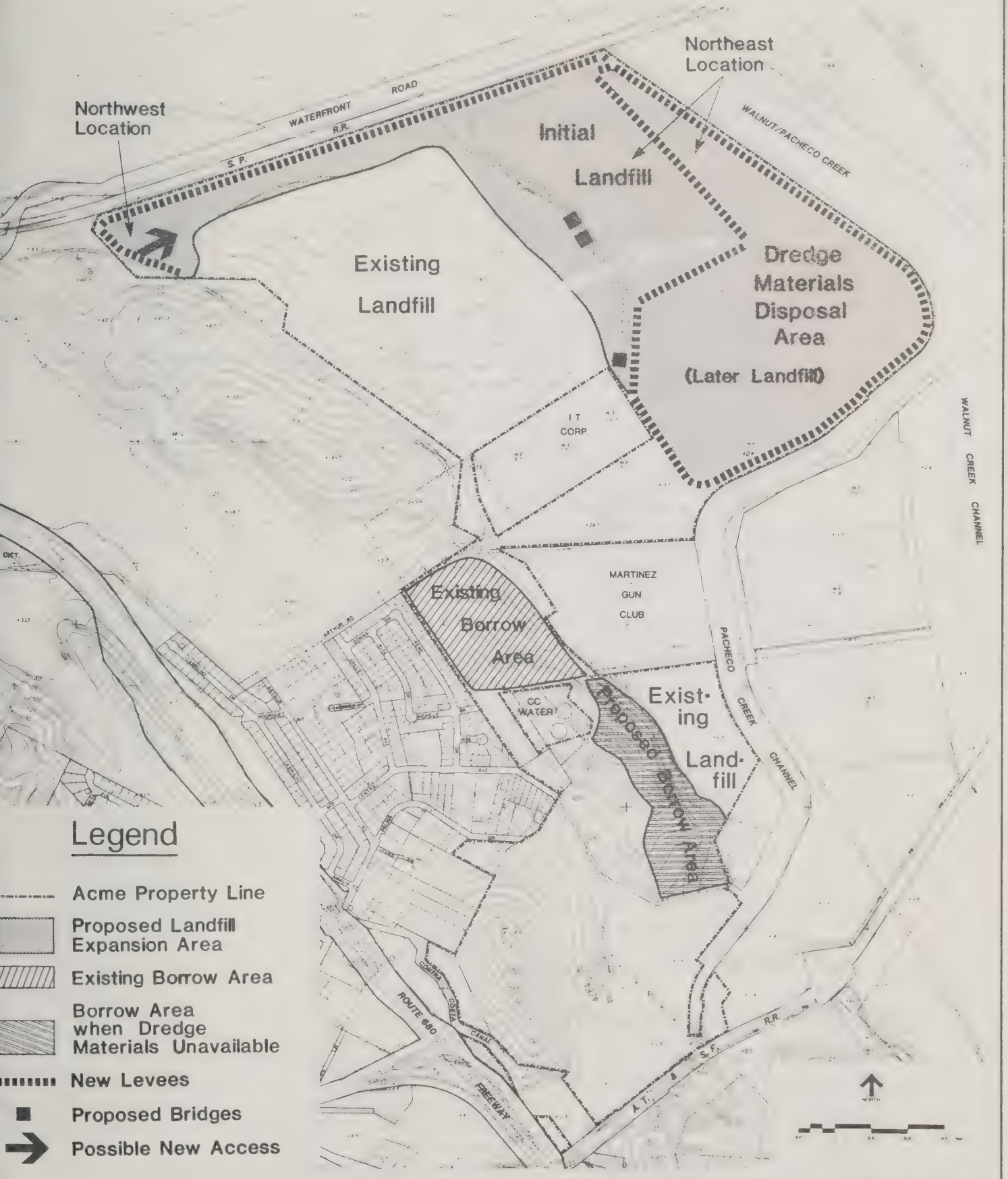
TORREY & TORREY INC. environmental/urban planning and design	REGIONAL LOCATION	EXHIBIT A

TORREY & TORREY INC. environmental/urban planning and design	Project Location	EXHIBIT B


LEGEND FOR EXHIBIT C
ACME FILL CORPORATION PROPERTY LINE
EXISTING LEVEES OR
EDGE OF LANDFILL OPERATIONS
CENTRAL SANITARY DISTRICT SEWER LINE
BOUNDARY OF IDENTIFIED
LANDFILL OPERATIONS
(Class I Site is within the ACME property)
ERRATA
Henry's Tree Service actually occupies the
southern half of the identified parcel.

Aerial View of Site

EXHIBIT C



ORREY & TORREY INC. environmental/urban planning and design	Proposed Project – Alternative A	EXHIBIT D1

2. About 5,700 linear feet of levees surrounding the proposed expansion area and 20,000 feet of levees for interior disposal cell construction
3. Possible new entrance from Industrial Access Road which was opened in February 1982.
4. Disposal area/drying area for dredged materials from maintenance of adjacent flood control channels.
5. Cover soil supply primarily from dredged materials disposal/drying area. Alternative source of cover from borrow site on southern portion of Acme's property.
6. Off-site mitigation area of 160 acres to compensate for loss of wetlands
7. About 8 acres of buffer zones around easements and pipelines
8. Additional landfill capacity to 1991
9. Continued current recycling/salvage efforts

Alternative B - Reduced Landfill Project

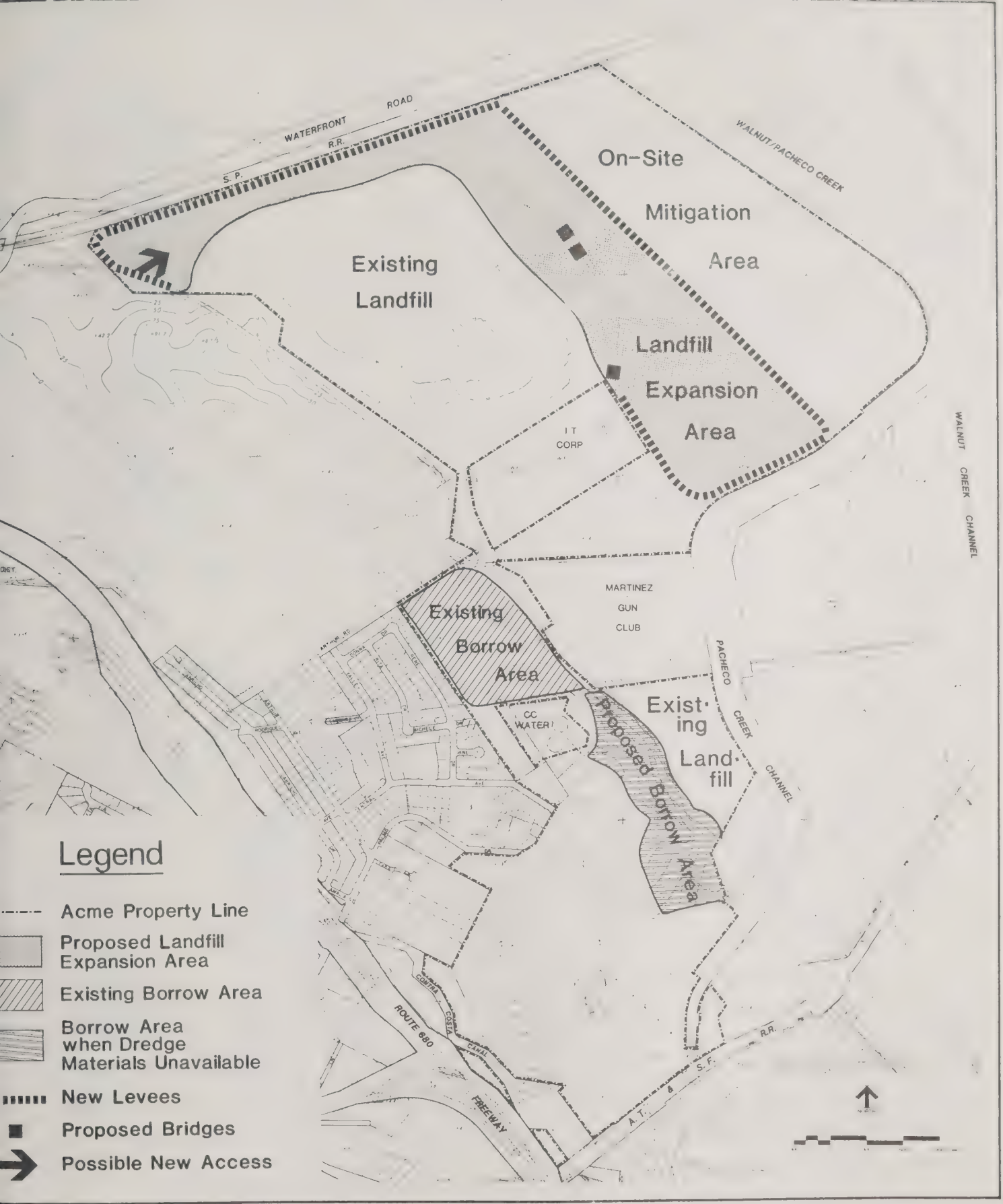
This alternative would expand the Acme landfill operations into the same adjacent area as Alternative A. However, only about 100 acres would be used for disposal operations. Another area of approximately 100 acres would be restored to marsh, opened to tidal action, and maintained as an on-site mitigation area. (Exhibit D2) This reduced project alternative would include the following elements and characteristics:

1. Three bridges across the Central Contra Costa Sanitary District pipeline
2. About 10,000 feet of levees surrounding the expansion area
3. Possible new entrance from the recently opened Industrial Access Road
4. Cover soil supply from borrow site located on southern portion of Acme's property
5. About 3.5 acres of buffer zone around the Central Sanitary District sewer line
6. Additional landfill capacity to 1986
7. Continued current recycling/salvage efforts

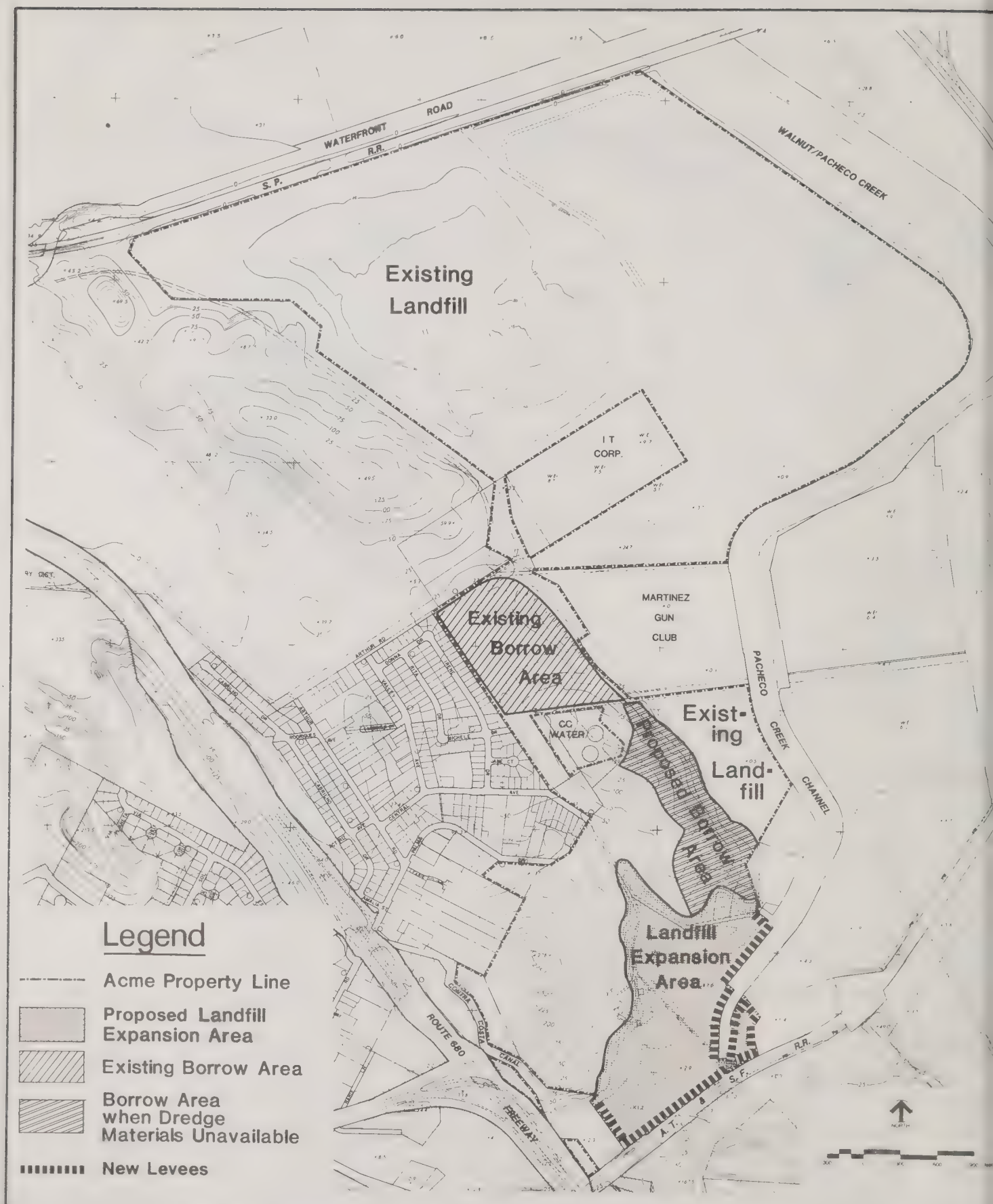
Alternative C - Landfill Disposal Elsewhere on Acme

This alternative would shift landfill operations to the southern portion of the Acme property. (Exhibit D3) Although the southern parcel consists of 178 acres, 22 acres are already being used for landfill and, of the remainder, only about 40 acres are suitable for landfill operations because of topographic constraints and utility easements. The currently inactive 20-acre Class I site is not part of this alternative. This alternative would include the following elements and characteristics:

1. An undetermined footage of levees
2. Buffer zones around all utilities and easements



ORREY & TORREY INC. environmental/urban planning and design	Reduced Project – Alternative B	EXHIBIT D2



TORREY & TORREY INC. environmental/urban planning and design	Alternate Acme Site – Alternative C	EXHIB D3

3. Additional landfill capacity to 1985
4. Continued current recycling/salvage efforts

Alternative D - Other Methods of Disposal (No Corps of Engineers Project)

This alternative consists of a comprehensive program designed to reduce the amount of solid waste going to landfills. It does not eliminate the need for a sanitary landfill. Three basic elements with the following characteristics comprise this alternative.

1. Waste Reduction

   - Public Information Program to encourage
   - substituting reusable products for throwaway items
   - buying less

2. Material Recovery and Recycling

   - central processing center
   - source separation and curbside collection
   - purchase or buy-back program
   - satellite program
   - donation program
   - office paper collection

3. Waste-to-Energy Facility

   - As proposed by Contra Costa Central Sanitary District, this project would use mass combustion to incinerate solid waste to produce electricity and reduce the volume of solid waste to be landfilled.

   - The project also includes the possibility of incinerating the sludge produced by CCCSD that is presently being disposed of by landfill.

Alternative E - Evaluation of Other Areas for Landfill (No Corps of Engineers Action)

Contra Costa County, in conjunction with the Corps of Engineers, selected five sites for analysis in terms of the relative suitabilities for landfill operations. Four areas are located in Contra Costa County. The fifth area is the existing Altamont Landfill in Alameda County. (Exhibit D4)

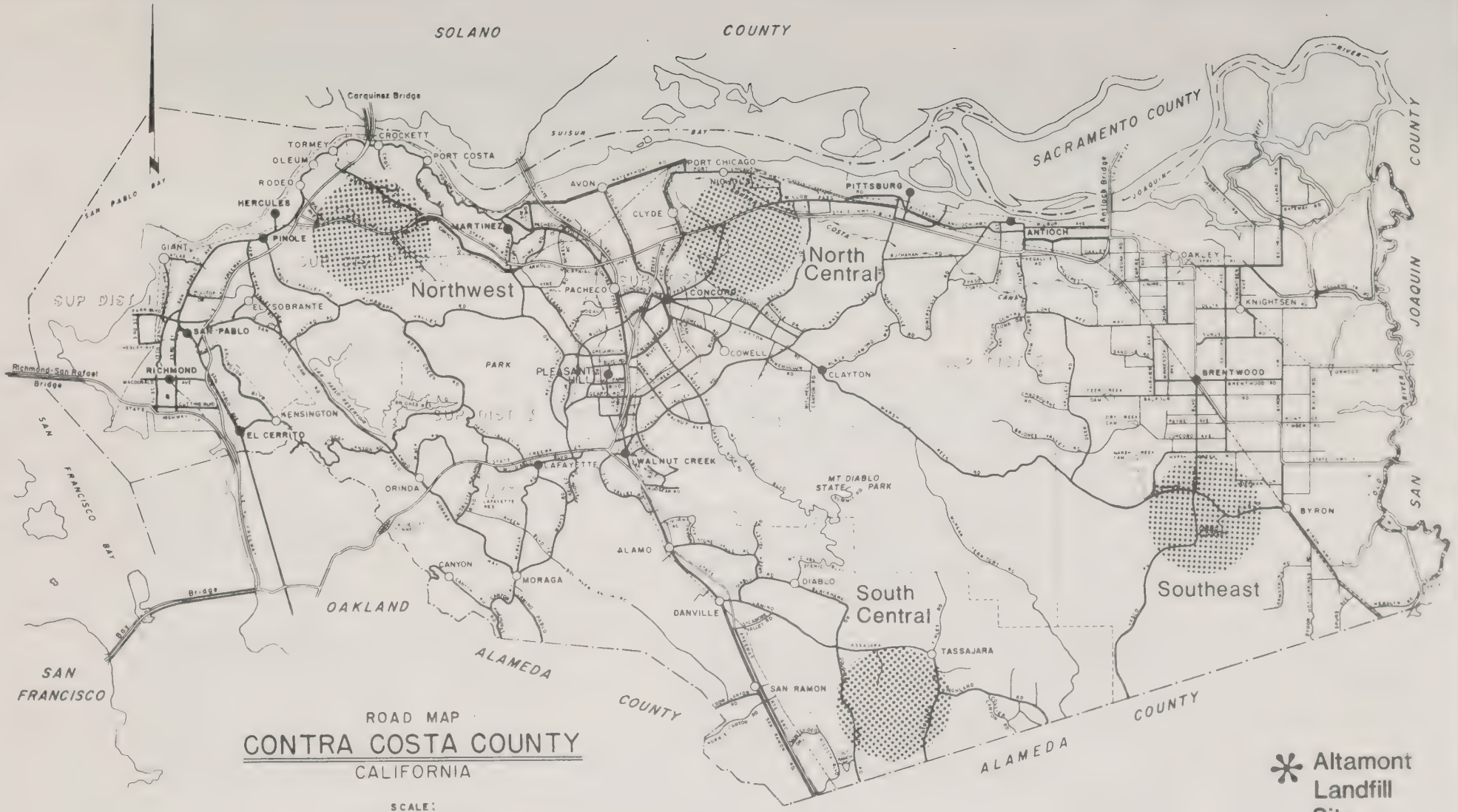
Each of the areas in Contra Costa County is believed to include two or more potentially suitable landfill sites as determined by previous studies and field reconnaissance. The general area approach was used as a manageable way for comparison of the locations in dispersed areas.

A. DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

The evaluation of these general areas for landfill site potential is necessarily general because no specific site is being considered at this time. Additional environmental analysis would be required before any specific site could be considered for a landfill operation.

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS

The following table presents a summary of the significant adverse impacts and recommended mitigation measures for the proposed project and alternatives. For detailed discussions, please refer to the appropriate sections of text following this chapter. All of the recommended mitigation measures should be required to effectively reduce the impacts to a level of insignificance. Those impacts which cannot be avoided are indicated in Section V. All mitigation measures would be the responsibility of Acme Fill Corporation unless indicated in parentheses.



TORREY & TORREY INC. environmental/urban planning and design	Potential Areas for Landfill – Alternative E	EXHIBIT D 4

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS

Impact	Mitigation	Alternative(s) Affected
Land Use		
• High potential for incompatibility with nearby residential areas	- Retain buffer area beween neighborhood and landfill operations; plant landscape barriers	A, B, C
Earth: Geology, Soils and Seismicity		
• High susceptibility to landslides (mudwave) on Bay Mud soils	- Maintain side slopes between 4:1 and 6:1 on Bay Mud; monitor for movement with slope indicators, piezometers and platforms	A, B, C
• Damage to utilities and pipelines due to differential settlement	- Implement set back requirements of 50 feet from existing levees and sewer lines - Implement set back requirements of 75 feet from existing levees	A, B C
• Areas of dredge materials disposal may be unstable for placement of landfill	- Areas used previously for dredge materials disposal should be completely dried and compacted prior to placement of fill	A
• Potential for seismic hazards along the Avon segment of the Concord Fault	- Enforce the 100-foot setback required by the RWOCB - Conduct field inspection of all levees, leachate drainage and control structures, etc., immediately following an earthquake - Mitigation Alternative: Limit the disposal of materials within 100 feet of the fault to Group 2 and 3 wastes with low liquid content and prohibit Group 1 wastes from this zone entirely.	A, B A, B, C A, B

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

Impact	Mitigation	Alternative(s) Affected
Water: Surface Water, Groundwater, Erosion		
• Leachate may contaminate surface waters	- Revise procedures for evaluating and detecting leachate seeps	A, B, C
	- Evaluate existing levees for effectiveness as a leachate barrier	A, B, C
	- Direct drainage from the landfill away from the mitigation area	B
	- Enclose the Contra Costa Canal adjacent to the Acme property	C
	- Prepare detailed surface drainage plans	A, B, C
• Truck wash water is a potential pollutant	- Install a truck washing area where wash water is disposed or treated properly	A, B, C
• Leachate may contaminate ground water	- Utilize Group 3 materials as the first layer of fill materials to serve as a "filter" for leachate	A, B, C
	- Place the equivalent of a clay layer at least 5 feet thick with permeability of 1×10^{-6} cm/sec or less on the bottom and sides of all disposal areas (RWQCB requirement)	A, B, C
	- Construct additional observation wells to monitor groundwater in the mitigation area	B
	- Construct observation wells to monitor groundwater adjacent to the Contra Costa Canal	C

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

Impact	Mitigation	Alternative(s) Affected
• High salinity of dried dredged materials for refuse cover may inhibit vegetation	- Mix dredged materials soils when used for cover material to be vegetated	
	- Prepare revegetation plans that should include salt-tolerant plant species	A
• Erodable surface area would be increased	- Develop revegetation program with low-cost broadcast seeding several times per month during the rainy season	A, B, C
	- Divert surface runoff to a reinforced channel or pipe	A, B, C
	- Seed all levees facing the mitigation area with a hydraulic slurry of seed, fertilizer, fiber mulch, and plant-based adhesive	B
• Very high potential for erosion and sedimentation in southern parcel due to topography	- Prepare a detailed erosion and sediment control plan which includes structural measures, revegetation methods and species	C
Biota: Vegetation and Wildlife		
• Existing wetland vegetation would be eliminated and eventually replaced by upland grassland resulting in reduced habitat value and lost wetland restoration potential	- Identify and acquire mitigation area which would compensate for the loss of wetlands and reduced habitat value	A, C
	- All mitigation areas should be thoroughly evaluated by the California Department of Fish and Game and U.S. Fish and Wildlife Service to determine adequacy of compensation	A, B, C
	- Increase habitat values of all mitigation areas over the habitat value of the area lost to landfill expansion by using proven marsh restoration practices	A, B, C,

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

Impact	Mitigation	Alternative(s) Affected
• Wetland habitat in preserved areas would be limited in productivity due to lack of tidal action	- Open preserved wetland areas to tidal action and construct stream channels to increase circulation and encourage vegetation	B
• Local wildlife populations would be reduced	- Increase and sustain habitat values on mitigation areas by completing and implementing a detailed habitat management plan for each mitigation area.	A, B, C
Air Quality		
• Dust, odor, and gas generation would continue to affect adjacent areas	- Develop and implement a complete dust control program	A, B, C
	- Treat dried dredge materials used for cover to control dust	A
	- Apply cover materials daily to reduce odors; (some days of odor problems are unavoidable especially in Alternative C due to closeness of residential neighborhoods)	A, B, C
	- Obtain a BAAQMD Permit (which may have additional conditions for operation to mitigate air quality impacts)	A, B, C
Circulation and Traffic		
• Hazardous traffic conditions would continue at the Waterfront Road off-ramp of I-680	- Regrade and repave northbound I-680 offramp at Waterfront Road; construct a right-turn lane	A, B, C

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

Impact	Mitigation	Alternative(s) Affected
Public Health and Safety		
• Methane generation may present a hazardous condition for adjacent areas	- Conduct further hydrogeologic studies to evaluate the effectiveness of levees as barriers to lateral gas migration	A, B, C
	- Install monitoring probes as disposal operations are conducted	A, B, C
• Fire hazards would continue with the extended landfill operations	- Prepare fire protection plan and include in contingency plan	A, B, C
• Vector hazards would continue with the extended landfill operations and deposition of dredge materials	- Continue present vector control methods (daily cover, etc.) in the landfill expansion areas; perform regular discing to close cracks in drying dredged material	A, B, C,
	- Design resource recovery operations to minimize vector accessibility	D
• Birds at the landfill may present a hazard for aircraft operations at Buchanan Field	- Conduct further investigation to determine the degree of bird hazard at Buchanan Field and possible mitigation if a hazard is shown to exist	A, B, C
• Landfill expansion in Alternative C is in conflict with FAA regulations requiring a minimum of 10,000 feet between runway and landfill operations	- Evaluate the Acme site to determine compliance with safety regulations (FAA responsibility)	C

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

Impact	Mitigation	Alternative(s) Affected
Cultural Resources		
• Unknown impacts on cultural resources located in Acme southern parcel	- Perform on-site reconnaissance of southern parcel to locate prehistoric artifacts	C
Aesthetics		
• High potential for conflict with nearby residential neighborhoods (including noise, odor, dust, etc.)	- Plant landscape buffer between neighborhood and landfill operations; retain hill and ridgeline east of neighborhood	A, B, C

C. SUMMARY COMPARISON OF ALTERNATIVES AND IMPACTS

Impact Area	Alternative A	B	C	D
1. Geology/Seismicity/Soils	-m	-m	-m	*
2. Surface Water	-m	-m	-m	*
3. Ground Water	-m	-m	-m	0
4. Erosion	-m	-m	-m	0
5. Vegetation	-m	-m	-m	0
6. Wildlife	-m	-m	-m	0
7. Air Quality	0	0	0	-m
8. Land Use	-m	-m	-m	*
9. Traffic	-m	-m	-m	-m
10. Noise	-m	-m	-m	-m
11. Economics	0	0	0	0
12. Public Health & Safety	-m	-m	-m	-m
13. Resource Conservation & Recovery	0	0	0	+
14. Energy	0	0	0	+
15. Cultural Resources	0	0	-m	*
16. Aesthetics	-m	-m	-m	*
17. Recreation	0	0	0	0

+ = Beneficial Impact
0 = No Significant Impact
* = Undetermined Impacts
- = Adverse Impact (m indicates mitigations recommended)

Alternatives

A Proposed Project - 200 acre landfill expansion
B Reduced Project - 100 acre landfill expansion
C Alternative Acme location - south parcel
D Other Methods of Disposal
E Other Area for Landfill Use - North Central Area

(See Table 8, Section IV for summary comparison of Alternative E off-site landfill alternatives.)

I INTRODUCTION

A. HISTORY AND BACKGROUND OF THE PROJECT

Acme Landfill near Martinez has been operated as a private enterprise by Acme Fill Corporation since 1949. It presently serves as the primary solid waste disposal site for Contra Costa County. In addition to the central county, its service area includes Antioch and Rodeo with waste also received from Benicia in Solano County. Approximately 1500 tons per day (TPD) of Group 2 and 3 and including certain Group 1 wastes are received at the site. (Table 1)

The existing 125- and 22-acre operations, as well as the proposed 200-acre expansion, are portions of approximately 535 acres owned by Acme Fill Corporation east of the City of Martinez and Interstate 680. (Summary Section Exhibits A and B) Other major portions of the property include a 178-acre southern portion which provides cover material and is the location of the 22-acre operational area. A 20-acre non-operational Class I site is also part of the Acme property (Summary Section Exhibit C).

The entire property is bounded on the north by the Southern Pacific Railroad (SPRR) tracks parallel to Waterfront Road, on the east by the Pacheco Creek and Walnut Creek Flood Control Channels and Henry's Tree Service, by the Santa Fe Railway (AT&SF) on the south, the Contra Costa Canal and the East Vine Hill/Pacheco neighborhoods on the southwest, and the Shell Oil Company land holdings on the northwest. Within this delineated area are located the Martinez Gun Club, an industrial waste disposal site owned by IT Corporation, and a parcel of land owned by the Contra Costa Water District. Two small portions of the Acme property are located to the southwest between the Contra Costa Canal and Interstate 680. (Summary Section Exhibits B and C)

Acme Landfill is allowed to accept all Group 2 and 3 wastes along with certain hazardous Group 1 wastes and treated dewatered sewage sludge from the Central Contra Costa Sanitary District under a Class II-1 permit from the San Francisco Regional Water Quality Control Board (RWQCB). Group 1 wastes consist of certain substances that could impair the quality of useable waters. Group 2 wastes consist of chemically or biologically decomposable material of municipal (residential/commercial), industrial, or agricultural origin. Group 3 wastes consist of nondecomposable inert solids such as construction and demolition debris. Table I shows the estimated daily quantities of these wastes disposed by Acme in 1982. Details of applicable and required permits for Acme's operation are provided in this chapter in Section D, Regulatory Permit Requirements and Status.

Acme operates as a Class II-1 sanitary landfill. Class II-1 disposal sites may be located above or adjacent to usable groundwater. Artificial barriers may be used beneath or alongside the fill to contain waste if natural conditions do not provide such confinement. Protection from a 100-year frequency flood must be provided. Groups 2 and 3 wastes can be accepted and, under special conditions, certain Group 1 materials may be accepted. Sanitary landfills must conform to federal and state regulations which require waste to be disposed in a restricted portion of the site, compacted to specified density, graded to designated slope, and covered daily with 5 to 6 inches of cover. Burning is not allowed.

Table 1

ESTIMATED WASTE QUANTITIES DISPOSED AT ACME LANDFILL
(Tons Per Day)[a]

Source	1980	1982	
Residential/Commercial (Group 2)		941	
Industrial (Non-Hazardous) (Group 2)		114	
Construction/Demolition (Group 3)		215	
Hazardous Wastes (Group 1)		50	d
Sewage Sludge[b] (Group 2)[c]		180	(wet)[d]
Total		1,500	e

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[a]Based on seven-day week.
[b]Sludge from Central Contra Costa Sanitary District.
[c]The Regional Water Quality Control Board considers "dewatered sludge" to be a Group 2 waste and further defines it as digested sludge having a moisture content of less than 85 percent.
[d]Based on recent monthly reports of Acme Fill to RWQCB.
[e]Estimated by Acme Fill Corporation.

SOURCES:

Data based on Acme Fill Corporation's total estimate.

In addition to disposing of solid waste, Acme staff recycle and salvage certain materials that are brought to the site. Some newspaper, cardboard, metals, scrap aluminum, and some glass are separated by hand and sold to processors.

In December 1978, Acme applied to the U.S. Department of the Army, Corps of Engineers for a permit to construct levees and expand its landfill disposal operations. That permit was denied primarily on the basis that the project would destroy valuable wetlands for a non-water-dependent purpose, that an environmentally preferable alternative was potentially available on the 178-acre southern property, and that Acme failed to provide sufficient and timely environmental information. Previously, the U.S. Fish and Wildlife Service evaluated the 200-acre expansion area in 1979 for wildlife habitat and found that approximately 91 acres support seasonal-wetlands vegetation, approximately 95 acres support lowland-grassland vegetation, and several wildlife species frequent the site. This evaluation estimated that filling the site would result in the loss of 5576 habitat units of mixed wetland and grassland vegetation. A 1977 study concluded that the primary value of this parcel is its potential as restorable marshland and that breaching the flood control dikes would return this area to daily tidal fluctuation and create a productive salt marsh within a relatively short time.[1]

In 1980 Acme Fill Corporation and the California Department of Fish and Game agreed to a Memorandum of Understanding for the acquisition and management of 160 acres of wetlands as an off-site mitigation for the proposed project. A new permit application, the one currently under consideration, was submitted to the Corps of Engineers on 22 March 1981.

B. PURPOSE AND NEED FOR THE PROJECT

1. Acme's Service Role

Acme Landfill provides a significant public service which contributes to the efficient functioning of households, businesses, industry, and government in central Contra Costa County. Approval of the proposed project would allow Acme Fill Corporation to use a 200-acre portion of its land to continue its business of providing waste disposal servcies to the public. Waste is also brought to Acme from Antioch and from Benicia in Solano County, across Carquinez Straits.

At the present time, Acme Landfill disposes of 64 percent of the county's solid wastes. It is the largest landfill in Contra Costa County and one of the largest in California. There are 8 collectors in its service area. In 1982, Acme Fill Corporation estimated that 1,500 tons per day (7 day week) of solid wastes are handled at the landfill.

The site collects from approximately 425,000 to 450,000 people in its service area. That service area includes the areas shown in Exhibit E1 as incorporated cities and Central Contra Costa Sanitary District in the central county (exclusive of Dublin-San Ramon Service District). Some isolated service areas are located on the fringes of this central service area.[2] The cities included in this area are: Orinda, Lafayette, Moraga, Walnut Creek, Martinez, Clyde, Concord, Pleasant Hill, Diablo, Clayton, Danville, Alamo, Briones, and West Pittsburg. In addition, waste is brought from Rodeo and Antioch and from Benicia in Solano County across Carquinez Straits.

Beyond serving its present service area, Acme is expected to accept wastes now going to the West Contra Costa Sanitary Landfill and Pittsburgh Landfill when these sites close in 1993 if Acme is still operating. Acme would then be accepting 173 additional tons per day or a total of approximately 72 percent of Contra Costa's solid waste based on 1980 estimated quantities.

Continued growth in population and employment is predicated on a supportive infrastructure of facilities and services. Part of this infrastructure is the proper disposal of solid wastes. Acme presently provides the major disposal facility in Contra Costa County.

The recently completed County Solid Waste Management Plan (draft) "...reaffirms local government support for the expansion of Acme landfill to the 200-acre parcel adjacent to the existing fill area." The Plan also recognizes that a new landfill site will be needed by the beginning of the next decade and gives the private sector until 1985 to secure a local land use permit for a new site elsewhere in the County.

2. Acme's Role in Hazardous Waste Management

Acme Landfill accepts approximately 50 tons per day of Group 1 hazardous waste that is generated almost entirely by the petroleum and chemical industries in Contra Costa County.[3] This solid waste, which is permitted by the Regional Water Quality Control Board, is buried on the currently operational 125-acre Class II-1 site. (Descriptions of these Group 1 wastes and disposal process requirements are provided in III.H. Public Health and Safety. A discussion of the Class I permit status for disposal of additional Group 1 solid waste on the 22-acre site is also provided in III.H.)

The Acme property includes a 20-acre Class 1 site with 4 ponds for the disposal of liquid hazardous wastes. This site is located between the Martinez Gun Club and the Class I site owned and operated by IT Corporation. Before 1968 the Acme Class 1 site was used for winter disposal of waste west of the existing ponds. Subsequently it was leased to IT Corporation (then the Industrial Tank Company) from 1961 to 1971.[4] The site was not used again until the Fall of 1980 when Acme used it for a short period for hazardous waste disposal with concurrence of the RWQCB. Since October 23, 1981, the Acme

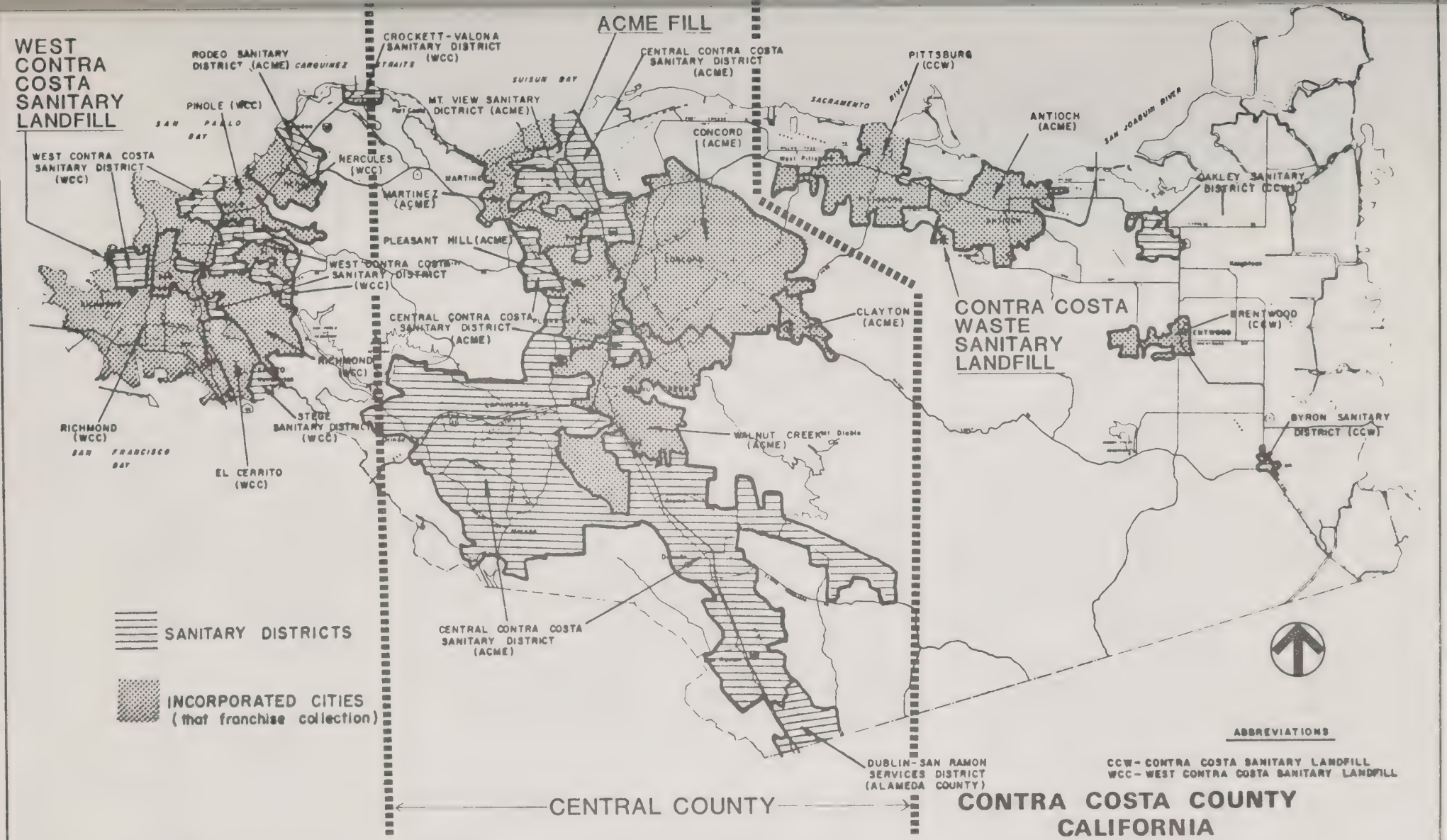
Class I site has been prohibited from disposal of Group 1 wastes by the provisions of the Interim Status Document issued by the California Department of Health Services. This restriction is based on the provisions of Assembly Bill 2370 which prohibits expansion, opening, or re-opening Class I sites within 2000 feet of existing residences after August 6, 1980. The matter is a subject of current discussions between the DOHS and Acme insofar as Acme's site was in operation prior to the effective date of the Bill, although the site was inactive at that time. (Further discussion is provided in Section D, Regulatory Permit Requirements; E, Policy Context; and in III.H. Public Health and Safety.)

Additionally, the Regional Water Quality Control Board Waste Discharge Requirements Order 76-37 issued April 28, 1976 prohibits Acme from using the Class I site for Group 1 wastes. Acme was required by the RWQCB to meet the provisions of the Porter-Cologne Water Quality Control Act. Although these improvements were completed in the Fall of 1980 and reported to the RWQCB in 1981, the site has remained inactive.[5] As an inactive site, it is not subject to regulations which may be required for continued operation or monitoring under formal closure.

To resolve the questions regarding the status of the Class I site, the RWOCB, in a letter dated June 22, 1982, requested Acme to propose a program responsive to concerns regarding the permeability of underlying soils, permeability and thickness of the containing dikes, flood control, and seismic safety. The RWQCB, which has the authority to waive conditions, if deemed appropriate for a specific case, has given Acme 60 days to respond to this request.[6] If Acme meets these new requirements and receives authorization from the RWQCB to dispose of Group 2 materials on this site, the current DOHS prohibition on Group 1 disposal on this site would still be in effect.

Re-opening Acme's Class I site would not eliminate the need to dispose of Group I wastes elsewhere. Class I sites which handle Group 1 wastes are limited in number and capacity. Of the 7 active Class 1 sites in California, 3 are located in the Bay Area: The West Contra Costa County Landfill and 2 sites owned by IT Corporation. One of these sites is immediately adjacent to the Acme property at the entrance to the 125-acre site. The other is located in Benicia in Solano County.[7]

With the Resource Conservation and Recovery Act hazardous waste monitoring program, which became effective November 1980, demand has increased for Class I sites. This demand reduces the useful life span of existing sites. The problem is further exacerbated by the difficulty of locating and permitting new sites. Under California State Water Resources Control Board classification, such sites require unique geological features and complex engineering developments to provide complete protection from ground and surface waters from all wastes deposited therein. Moreover, with increased public involvement in hazardous waste disposal planning, facility siting is by far the most difficult problem facing the hazardous waste program in California.[8]



Source: Contra Costa County Solid Waste Management Plan, 1982.

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Demand for landfill disposal of some hazardous wastes could be reduced by recently developed techniques. Such techniques include recycling, incineration, neutralization, chemical oxidation, evaporation, and ion exchange. To encourage the use of such techniques and to divert hazardous wastes from landfill disposal, Governor Brown issued Executive Order B8881 October 13, 1981. This Order prohibits six categories of highly toxic wastes from landfill effective January 1, 1983: PCB's, cyanides, pesticides, toxic metals, halogenated organics, and non-halogenated organics. (Section III.H. Public Health and Safety) The California Department of Health Services has been directed to formulate a program to set target dates for the program and concentration limits for toxic waste materials. How this Order would affect demand for disposal via the Acme Class I site is not known at this time.

Re-opening Acme's Class I site would add capacity to licensed Class I sites that are regulated by state and federal regulations. Although hazardous waste ponds that use solar evaporation processes to dispose of liquid hazardous wastes have an indefinite life, the quantity of liquid that may be disposed at any given time in such ponds is limited. Federal regulations require a minimum of 2 feet of freeboard to prevent any overfilling, and wave action, and to withstand a 100-year storm.[9] Such considerations limit use during rainy seasons when normal rainfall replaces some of the average pond capacity. In years such as 1981-1982 when rainfall was far above average, these regulations assume particular importance and severely restrict the quantity of liquid hazardous wastes that can be placed in such ponds.

Whether or not re-opening Acme's Class I site for Group 1 wastes would preclude its use for disposal of Groups 2 and 3 wastes would depend on the nature of Group 1 wastes disposed. The specific wastes, the concentrations of hazardous substances in those wastes, and the physical state of the materials disposed there would be a factor in Acme's decision to re-open or formally close the site. This matter would also depend on what materials are allowed by conditions of the RWQCB's Waste Discharge Order Requirements for that site. Further, the compatibility of Groups 2 and 3 wastes disposal methods with handling procedures required for Group 1 wastes would have to be determined at a later date. The use of solar evaporation ponds, for example, would preclude the use of spreading and compaction equipment used for landfilling municipal solid wastes.

If Acme elects to formally close the Class I site, the suitability of that site for Groups 2 and 3 wastes would depend on Acme's closure plan. That plan is not available at the present time. Disposal of Groups 2 and 3 wastes in the site would probably require some excavation and removal of previously disposed materials and remaining sludges. A plan based on capping the ponds would preclude further filling activities.

Acme representatives estimate that the Class I site would have a 4- to 6-months' capacity for Groups 2 and 3 wastes if used exclusively for this purpose since the location of the site and its topography restrict the amount of waste that could be buried there.[10]

3. Projected Future Solid Waste Quantities

In the preparation of the County Solid Waste Management Plan (Draft), an estimate was made of the quantities of solid waste received at Acme Landfill. Projections of waste quantities to be disposed of at the site were made to 2000 on a five-year incremental basis. Acme Fill Corporation generally accepts these projections as reasonable.[11] Table 2 shows the five-year totals of solid waste tonnage per day, the five year percent change, and average annual percent change. An itemization by waste group (Groups 1, 2, and 3) is presented in Appendix A.

Table 2

PROJECTED FUTURE WASTE QUANTITIES
SERVICE AREA OF ACME FILL*
1980 - 2000
(Tons Per Day)**

	1980	1985	1990	1995	2000
Total Waste Disposal at Acme Landfill	1,344	1,550	1,736	1,883	2,014
Percent Change		15.3%	12.0%	8.5%	7.0%
Average Annual Percent Change		2.9%	2.3%	1.6%	1.4%

*Includes imports from Benicia (Solano County).

**Based on seven-day week.

SOURCES: ABAG, Solid Waste Facilities Study, December 1979.
Contra Costa County, Public Works Department, County Solid Waste Management Plan, Final Draft, December 1981, with revisions made January 1982.

4. Life Expectancy of Acme Landfill

Acme Fill Corporation expects its 125- and 22-acre sites, where current landfill operations are conducted, to be full by 1983. To continue operations beyond that date would require additional property to be opened. No closure plan for either of these sites is now available.

The County Solid Waste Management Plan (Draft) estimated the longest possible life expectancy for Acme Landfill to be to the year 2000 with material recovery and waste-to-energy facility. This projection is based on the Plan's Scenario 6 (Appendix A). Scenario 6 assumes the use of the existing operation area plus use of areas A, B, C, D, E and F shown in Figure E2. These areas are the 200-acre northeastern parcel, a portion of the 178-acre southern parcel against the existing hills, the currently inactive 20-acre Class I site, and two additional properties not now owned by Acme. Life expectancy could be lengthened if additional fill capacity is made available by filling the borrow pit now being used for cover material.[12]

The County Plan assumes a maximum fill height of 40 feet, 4:1 side slope ratio, in-place density of refuse of 1,200 pounds per cubic yard, and refuse-to-cover material ratio 9:1.[13]

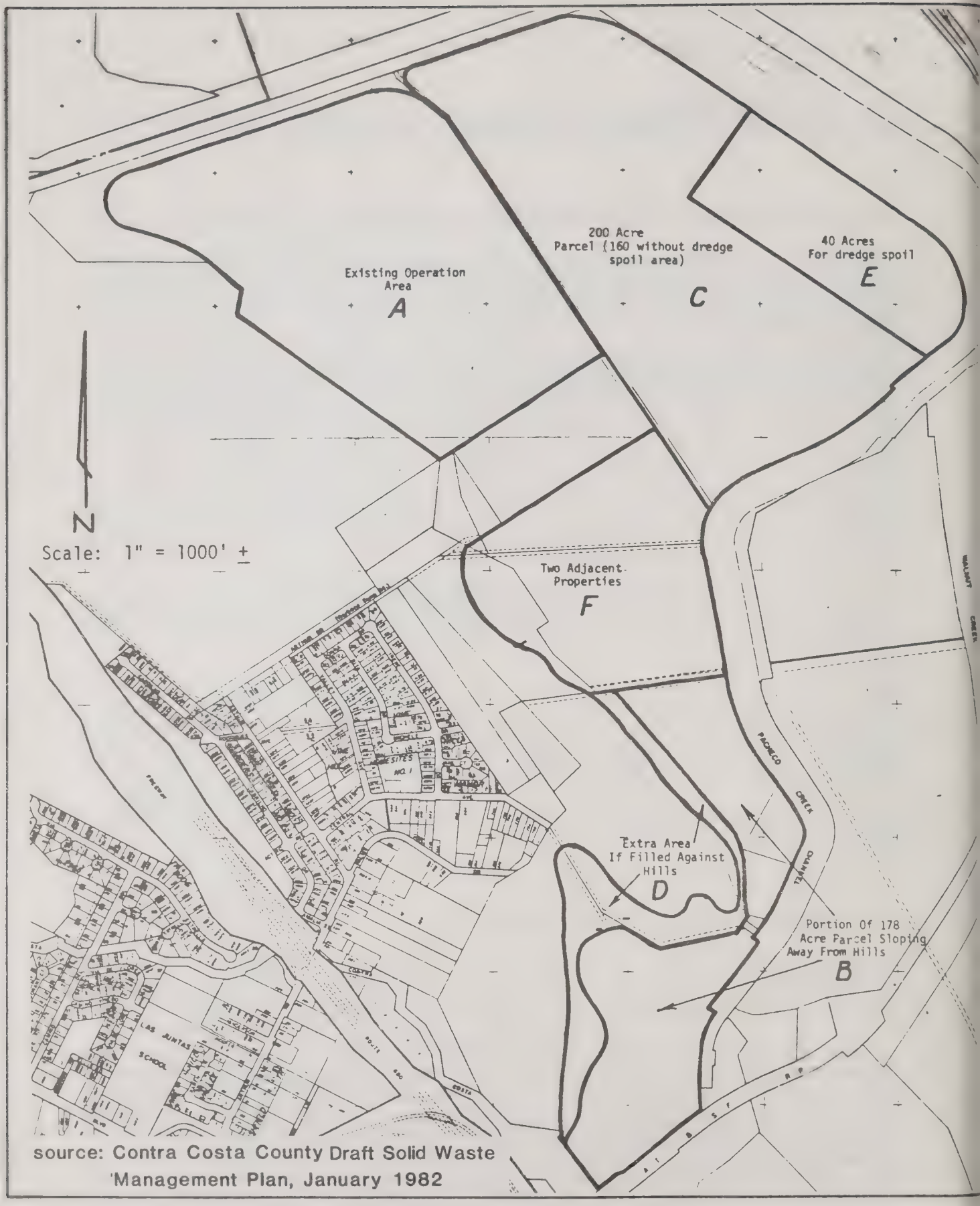
These assumptions differ somewhat from Acme's current practices. Current fill in the northern parcel is about 80 feet in some places, average slope 5:1, refuse-to-cover is shown in recent quarterly reports to the Regional Water Quality Control Board as 4:1 to 5:1, and in-place density is estimated to be slightly higher than 1,200 pounds per cubic yard.[14]

Without recycling or energy recovery, the longest possible life expectancy under scenario 6 is reduced to 1994.[15]

C. PURPOSE AND NEED FOR AN EIR/EIS

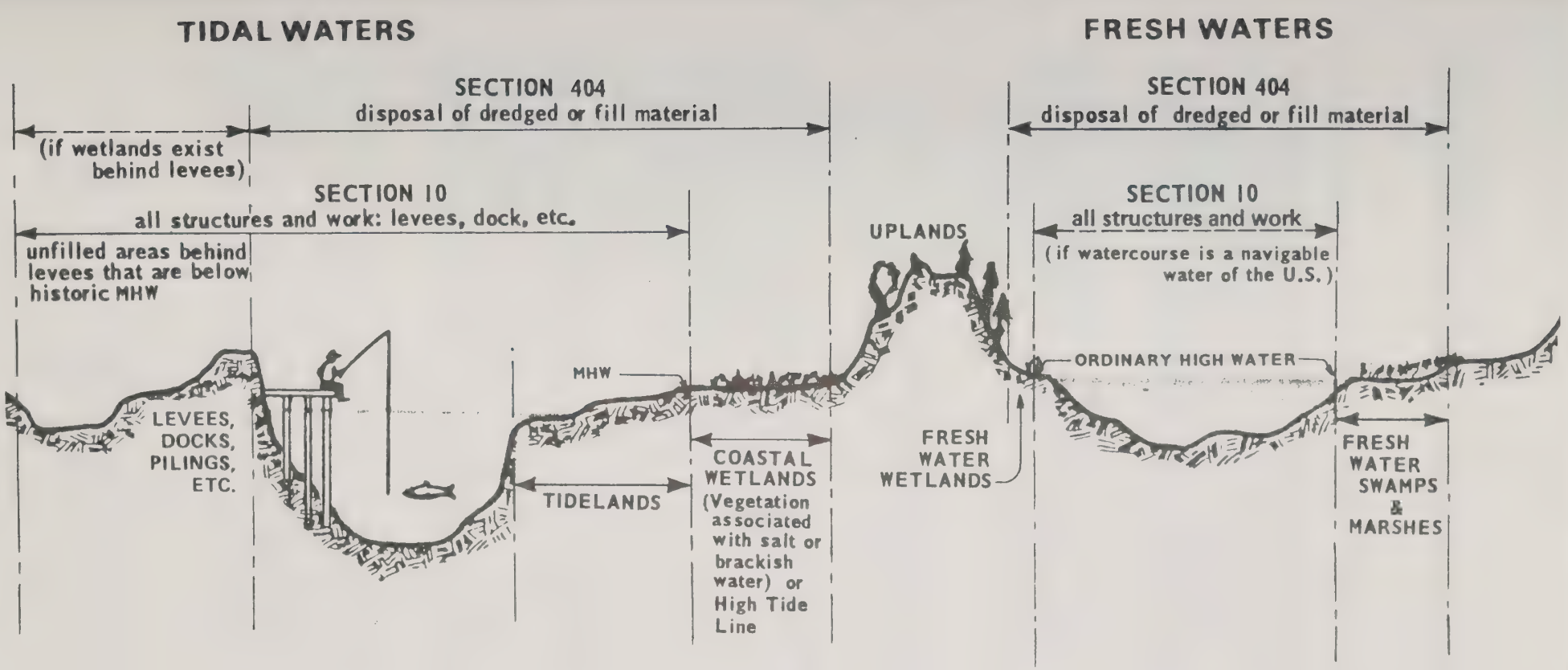
This EIR/EIS has been prepared to meet the requirements of both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) as part of the state and local, and federal permitting process.

A previous permit application submitted by Acme Fill Corporation to the U.S. Department of the Army, Corps of Engineers, San Francisco District in December 1978 was denied, in part, on the basis of lack of sufficient and timely environmental information. This report has been prepared to provide such information as part of a new permit application submitted by Acme to the Corps 11 March 1981. Distribution of the Draft EIR/EIS will be via direct mailing and through the clearinghouse process to appropriate agencies for review and comment. In accordance with CEQA requirements, this EIR/EIS will be available for public review and public hearings. Opportunities to submit written comments will be provided.



source: Contra Costa County Draft Solid Waste Management Plan, January 1982

TORREY & TORREY INC. environmental/urban planning and design	Potential Landfill Areas– Acme and Adjacent Parcels	EXHIB E 2



NOTE:

IN ADDITION TO SECTIONS 10 AND 404 JURISDICTIONS, THE CORPS REGULATES THE TRANSPORTATION OF DREDGING MATERIAL FOR THE PURPOSE OF DISPOSING INTO OCEAN WATERS (SECTION 103).

source:

United States Army Corps of Engineers

...Serving the Army
...Serving the Nation

San Francisco District

TORREY & TORREY INC. 2T environmental/urban planning and design	Corps of Engineers Regulatory Jurisdiction	EXHIBIT F

D. REGULATORY PERMIT REQUIREMENTS AND STATUS

The primary permitting agencies for the proposed activity and its alternatives are Contra Costa County and the U.S. Department of the Army, Corps of Engineers. However, because of the particular nature of the proposed activity and because a wetlands area is involved, several other federal, state and local agencies also have regulatory authority. Permits which would be required for Alternatives A through D are explained in paragraphs 1 through 7 below. Additional regulatory considerations are discussed at the end of this section.

The City of Martinez is currently contemplating annexation of the Acme property and surrounding area. The City currently has no regulatory authority over the project. General City policies which would apply to the project are also discussed in this section.

1. U. S. Department of the Army, Corps of Engineers

Permit Required: Department of the Army Permit

Statutory Authority: A Department of the Army permit is required under Section 10 of the River and Harbor Act of 1899 and Section 404 of the Clean Water Act of 1977 (formerly the Federal Water Pollution Control Act Amendments of 1972) in order to construct a levee and dispose of dredged material and compacted solid wastes in formerly navigable waters of the United States. Section 10 gives the Corps of Engineers authority to regulate construction of levees, fill and other structures in navigable waters, including the authority to deny a permit for reasons concerning fish and wildlife, conservation, pollution, aesthetics, ecology, and the general public interest. Section 404 gives the Corps the authority to regulate the discharge of dredged or fill material into waters of the United States. Because the discharge of solid wastes is regulated by the Environmental Protection Agency or the States under Section 402 of the Clean Water Act, sanitary landfills are not considered to be a discharge of fill material under Section 404. Under Corps of Engineers regulations (33 CFR 323) "waters of the United States" includes wetlands adjacent to other waters of the United States. Exhibit F.

Department of the Army regulations (33 CFR 320.4) also require the Corps to determine the desirability of using alternative locations and methods (to the proposed activity) and to discourage the unnecessary alteration or destruction of wetlands. Specifically, the District Engineer, when determining whether or not to issue a permit under these authorities, is required to consider whether an activity proposed for a wetlands area is primarily dependent upon being located in, or close to, the aquatic environment and whether feasible alternate sites are available.

Existing Permits: None required on current 125-acre operations. The Corps of Engineers is presently investigating the current 22-acre operation to determine if a permit is required.

Permit Application: 11 March 1981 for Proposed Project (Alternative A)

Permit Requirements: Of the 200 acres that are the subject of Alternative A, about 180 acres are within the jurisdiction of the Corps of Engineers. Alternative B would also require a Corps permit. Portions of the 178-acre site of Alternative C are also within the Corps' Section 10 and Section 404 jurisdictions. Whether Alternative D would require a Corps permit depends on the location of any landfill associated with this alternative.

In granting a permit the Corps may require a set of Special Conditions in addition to the General Conditions included in all permits. Special Conditions normally address the location or design of a structure or fill rather than its use or operation. Certain mitigation measures recommended in this EIR/EIS may be included in a permit issued to Acme either by incorporation into the plans for the landfill or as Special Conditions.

When considering issuance of Department of the Army permits the Corps is required to coordinate with other federal, state, and local agencies and to address the mandates of other applicable federal legislation and regulations discussed in this section.

Comments: An earlier application dated December 1978 by Acme Fill Corporation for this permit was denied by the Corps in December 1980. The primary reasons for denial were that the project would destroy valuable wetlands for a non-water-dependent purpose, an environmentally preferable alternative was potentially available in the 178-acre southern property, and Acme failed to provide sufficient and timely environmental information.

2. U.S. Environmental Protection Agency (EPA)

Permit Required: Identification Number

Statutory Authority: Resource Conservation and Recovery Act of 1976, PL94-580. Title II Solid Waste Disposal Act. Federal Regulations CFR 165.11

Existing Identification Number: CAD 041835695

Dated: 19 November 1980

Area Included: 370 acres including 125- and 22-acre current operations area, inactive Class I site, Alternatives A and B area. Alternative C area appears to be included but precise surveys would be required.

New Permit Requirements: Current number would remain effective for Alternatives A, B, and C.

Comments: In accordance with the Federal Regulations (Title CFR 265.11), EPA issues an identification number for facilities that handle hazardous (Group 1) waste.

3. California State Department of Health Services

Permit Required: Interim Status Document

Statutory Authority: Solid waste Managemetn and Resource Recovery Act of 1972; Title 7.3 California Government Code Solid Waste Management and Resource Recovery. California Health and Safety Code, Section 25200.5

Existing Permit: CAD 04183569 (Group 1 Waste)

Issued: Effective October 23, 1981

Area Included: 125-acre existing operations

Areas Excluded: The State DOHS Interim Status Document specifically prohibits disposal of hazardous wastes on any portion of the facility which was not actually and lawfully used for the disposal of hazardous waste as of August 6, 1980 and which is situated within 2,000 feet of a permanently occupied residence, a human hospital, a school for people under 21 years of age, a children's day care center, or any permanently occupied human habitation. This prohibition specifically includes, but is not limited to, any portion of Alternatives A and B which are situated within 2,000 feet of any of these land uses, the 22-acre dry-weather site in the southern portion of the property, and the currently inactive 20-acre Class I hazardous waste ponds site. By implication, Alternative C would be included in this exclusion.

New Permit Requirements: Alternatives A, B, C, and D, to the extent that a landfill is involved, all require a hazardous waste facilities permit from the DOHS for Group 1 wastes. The DOHS has direct jurisdiction over Class II-1 disposal operations and delegates some responsibility of control, inspection and regulation to the County Health Department.

4. San Francisco Bay Regional Water Quality Control Board (RWQCB)

Permit Required: Waste Discharge Requirements Order

Statutory Authority: California Water Code, Division 7, Chapter 4, Article 4, Section 13.260

Existing Permit: Waste Discharge Requirements Order No. 76-37

Issued: April 20, 1976

Amended: By Order 770139 November 1977. By letters from the Executive Officer, May 13, August 31, and December 14, 1981.

Site Classification: Class II-1

Areas Included: Order No. 76-37 specifies 480 acres of Acme's property covered by that permit. According to Acme's engineers, Harding Lawson and Associates, a more recent survey shows the site acreage to be on the order of 535 acres.

Areas Excluded: Areas within 100 feet of the Concord Fault and the currently inactive 20-acre Class I site are excluded from disposal of Group 1 waste.

New Permit Requirements: Existing Waste Discharge Order No. 76-37, as amended conditionally allows any of the 480 acres covered by the order subsequent to Staff review, approval and conditions. Such approval includes a written statement by the Executive Officer that measures necessary to meet waste discharge requirements have been taken. In effect, Alternatives A, B, and C require this written approval.

5. Bay Area Air Quality Management District (BAAQMD)

Permits Required: Authority to Construct; Permit to Operate

Statutory Authority: Bay Area Air Quality Management District Regulation 2-1-301 Authority to Construct, 1972, Re-Codified, effective January 1, 1980. Regulation 2-1-302 Permit to Operate.

Existing Permit: None

Comments: Acme's current 125-acre disposal operation was begun before the BAAQMD (formerly the Bay Area Air Pollution Control District) was established and permits required. According to the BAAQMD, an Authority to Construct and a Permit to Operate would be required for implementation of Alternatives A, B, C, and D to the extent that a landfill is involved. Alternative D would also require BAAQMD Authority to Construct and Permit to Operate for the waste-to-energy conversion facility. It is Acme's position that a permit is not required since BAAQMD was formed after Acme's operations began.

6. Contra Costa County, Board of Supervisors

Permit Required: Land Use Permit

Statutory Authority: Contra Costa County Ordinance Code, Chapter 4184, Health and Safety Code

Existing Permits:

a. **LUP 615-60**

Issued: December 2, 1958

Areas Included: The eastern portion (only) of the current 125-acre landfill, the eastern portion of the proposed project areas and the 20-acre hazardous wastes site (closed).* The 178-acre southern parcel is not included in this permit. (Areas shown in Appendix A)

b. LUP 2052-81

Issued: July 7, 1981

Area Included: The 22-acre landfill area in the southern parcel.

New Permit Requirements: Alternatives A and B would require a Land Use Permit for the northwest portion of the proposed expansion area, near the access road and a portion of the northern "leg", north of the present landfill. Alternative C would require a Land Use Permit for the portions of the southern parcel to be filled. Alternative D could require a permit if the reduced fill in that alternative were not located entirely on lands currently under permit. A Land Use Permit would also be required to regulate expanded cover excavations on the southern site and may be necessary as a means of assuring some of the mitigation measures.

7. Contra Costa County, Health Services Department

Permit Required: Solid Waste Facilities Permit (Group 2 Waste)

Statutory Authority: Government Code Title 7.3 Section 66796.30

Existing Permit: 07-AA-002 Solid Waste Facilities Permit (Group 2 Waste)

Approved: December 4, 1981 by the State Solid Waste Mangement Board

Issued: December 9, 1981 by the Health Services Department as the local enforcement agency

Area Included: 503.61 acres consisting of 125-acre current operations area, 178.61-acre southern site (Alternative C), and 200-acre eastern area (Alternatives A and B). The permit would be revised or superceded to cover major changes in the operation of the landfill.

Area Excluded: The 20-acre Class I hazardous waste site.

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*The parcels covered under existing Land Use Permits are shown in the Regulatory Appendix.

Comments: A Solid Wastes Facilities Permit for Group 2 waste is required under Government Code Title 7.3 Section 66796.30. It is a local permit issued by the Contra Costa County Department of Health Services, the Local Enforcement Agency, after approval by the State Solid Waste Management Board. Acme's current 1981 permit nullifies the previous May 1979 permit and conditions it contained.

E. POLICY CONTEXT

The following paragraphs summarize the applicable portions of Federal, State and Local laws, ordinances, policies and regulations which must be considered by various agencies prior to issuance of the seven permits discussed in the preceding section.

1. Coastal Zone Management Act of 1972 (federal)

Section 307(c) of this act, as amended, prohibits the Corps of Engineers from issuing a Department of the Army permit in a coastal zone unless the permit applicant has furnished certification that the proposed activity complies with the State's coastal zone management program, in this case the Bay Conservation and Development Commission (BCDC) Bay Plan. Although the project site lies outside the BCDC jurisdiction under the McAteer-Petris Act (i.e., it lies more than 100 feet inland from the line of highest tidal action of the San Francisco Bay and its tributaries)[16] the project may affect land uses and water uses within the jurisdiction. Section 307(c)(3)(A) of the Coastal Zone Management Act requires any proposed activity requiring a Federal permit to be consistent with the State's program (Bay Plan) if it would affect land or water uses within the coastal zone, regardless of the project location. BCDC believes that the Acme expansion may affect land uses in the coastal zone because it would be a non-conforming use in a water-related industry priority area (the Bay Plan designates "priority use areas"). This could conceivably force new, water-related industries into non-industrial areas of the waterfront area.

Bay Plan Maps 17 and 19 designate most of the Martinez-West Pittsburg shoreline area for water-related industry. (The remainder of the area is designated for conservation of tidal marshes.) It is doubtful, given the large amount of undeveloped area designated for water-related industry, that the proposed project or its alternatives would affect future land or water uses in the coastal zone between Martinez and West Pittsburg. It is possible that filling of the proposed expansion area would enable the site to be used for water-related industry in the future.

2. Fish and Wildlife Coordination Act

This act requires the Corps to consult the U. S. Fish and Wildlife Service, National Marine Fisheries Service, and California Department of Fish and Game

during preparation of an environmental study prior to issuance of a Department of the Army permit. Formal consultation with these agencies will occur through their review of the Corp's Public Notice and this EIR/EIS. The Corps of Engineers' regulatory program requires the District Engineer to give great weight to the views of these agenices in evaluating a permit application.

All three agencies have expressed preliminary concerns which are discussed in Section III (Biota) of this report. The U. S. Fish and Wildlife Service has expressed concern regarding the potential loss of wildlife habitat on the 200-acre expansion area as well as the potential for leachates from the landfill reaching the Walnut Creek channel (and subsequently the Bay-Delta estuary) and potential seismic problems of the site particularly regarding the integrity of the levees.[17] In 1979, in response to an earlier Acme application for a permit, the U. S. Fish and Wildlife Service, in coordination with the California Department of Fish and Game, conducted a Habitat Evaluation Procedures (HEP) analysis of the 200-acre area which identified specific plant and wildlife types and assigned an overall Habitat Unit Value to that parcel (see Biota Appendix).[18] The California Department of Fish and Game and the National Marine Fisheries Service have agreed, in principle, to acquisition and restoration (by Acme) of a tidal marsh area off-site as compensation for loss of on-site wetlands. This compensation area would be a diked, historical wetland of approximately the same size as the existing on-site wetland area and would be owned and managed, after restoration, by the California Department of Fish and Game. Although a specific compensation site has not been agreed to by all parties, Acme and the California Department of Fish and Game have entered into a Memorandum of Understanding providing for the purchase, restoration, and acceptance of 160 acres of off-site restorable wetlands.[19] (This memorandum contemplates 160 acres because Acme claims that 40 acres of the 200-acre expansion area are either outside Corps jurisdsiction or cannot be filled because of the need to avoid the Sanitary District's pipeline which crosses the site.[20]) The National Marine Fisheries Service has recommended that Acme purchase and restore to tidal action 206 acres of historic wetland.[21]

The U. S. Fish and Wildlife Service has not agreed to compensation for the loss of existing wetlands. It is the policy of this agency to oppose non-water-dependent projects which involve the filling of wetlands, particularly if alternative upland sites are available.

The California Resources Agency has determined that the Acme landfill qualifies for an exemption from that agency's Wetland Policy[22] due to governmental actions which occurred prior to the issuance of the Policy in September 1977, including approval of the Contra Costa County Solid Waste Plan by the State Solid Waste Management Board and field assessments of the project by the California Department of Fish and Game and the U. S. Fish and Wildlife Services.[23] Under the Wetland Policy, the Resources Agency (and its Departments, Boards and Commissions) would not normally approve projects which involve the filling of wetlands.

3. Endangered Species Act

This Act was passed in 1973 to provide protection for animal and plant species that are currently in danger of extinction ("endangered") and those that may become so in the forseeable future ("threatened"). Section 7 of the Act requires federal agencies to ensure that their actions do not have adverse impacts on the continued existence of threatened or endangered species or on the designated areas (critical habitats) that are important in conserving those species. The U. S. Fish and Wildlife Service maintains current lists of species which have been designated as threatened or endangered. At this time, none of those species listed have been reported from the Acme site. However, restoration of portions of the site to tidal salt marsh could provide habitat for some species. Section III.D. Biota of this report discusses the implications of the project and the alternatives on endangered species.

4. National Historic Preservation Act of 1966, as Amended, and Executive Order 11593, Protection and Enhancement of the Cultural Environment (May 13, 1971)

This Act established the National Register of Historic Places and requires the Corps of Engineers to consider the impacts of proposed activities on properties included in the National Register. Executive Order 11593 requires the Corps, when considering issuance of a permit, to identify in consultation with the state historic preservation agency any property potentially affected by the proposed action which is eligible for listing in the National Register. No properties listed or proposed for listing in the National Register, State Historic Landmarks or other known cultural resources are located within or adjacent to the project site. The California Archaeological Site Survey found that the proposed 200-acre landfill expansion area (Alternatives A and B) is an area of low archaeological sensitivity and concluded that no field survey of that area is necessary.[25] However, upland portions of the southern parcel (Alternative C) are considered highly sensitive and, therefore, excavation or filling of these areas may require an archaeological site survey.[26] (For further discussion of archaeological and other cultural resources see Section III.L.)

5. Executive Order 11988, Floodplain Management (May 24, 1977)

In order to reduce the risk to human safety health, welfare and property associated with floods and in order to preserve the natural and beneficial values served by floodplains, federal agencies are directed by this Order to evaluate the potential effects of actions, including the granting of permits, which they may take in floodplains. This EIR/EIS evaluates these effects, including the effects of other practicable alternatives as required by the Order.

Most of the Acme property including the entire fill area for Alternatives A, B, and C, is located within the flood hazard area indicated by the HUD Flood Hazard Boundary Maps (revised September 1977). Although placement of fill in these areas would not substantially decrease the area of the entire floodplain,

it could restrict the flow of the Walnut Creek-Pacheco Creek flood control channel if a slide were to occur at the east end of the fill proposed in Alternatives A and C. If such a slide were to occur during the rainy season flooding could result on properties on both sides of the Creek, including the IT Corporation and Acme Class I waste disposal sites. (See Section III.C.) Alternate sites in the off-site study areas could allow the landfill to be located outside floodplain areas. These areas are evaluated in Section IV.

6. Executive Order 11990, Protection of Wetlands (May 24, 1977)

This Order calls for Federal agencies to "preserve and enhance the natural and beneficial values of wetlands" in carrying out agency activities which involve wetlands. Because the order specifically exempts issuance of Federal permits to private properties on non-Federal property, this authority would not be considered by the Corps of Engineers during review of Acme's application for a Department of the Army permit. However, the U. S. Fish and Wildlife Service frequently cites Executive Order 11990 as one authority for making formal comments on non-Federal projects to the Corps of Engineers during the review period, under provisions of the Fish and Wildlife Coordination Act.

7. EPA Guidelines for Specification of Disposal Sites for Dredged or Fill Material

These guidelines (40 CFR Part 230), which are regulatory, prohibit "the discharge of dredged or fill material if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other adverse environmental consequences." The practicability of an alternative must take into account cost, existing technology and logistics in light of overall project purposes, but need not require ownership of an alternate site by the project applicant. For projects which are non-water-dependent, it is presumed that alternative sites located in non-aquatic areas would be available and would have a less severe impact on the aquatic ecosystem. The information and evaluation required by these guidelines has been included in this EIR/EIS.

8. CEQ Memorandum on Analysis of Impacts on Prime or Unique Agricultural Lands

This memorandum from the Council on Environmental Quality, dated August 11, 1980, instructs all Federal agencies to determine the effects of agency or agency-permitted actions on prime or unique agricultural lands, and to examine alternatives to these actions, in the preparation of environmental documents under NEPA. Federal agencies are also instructed to cooperate with state and local governments in their efforts to help retain these lands.

The Soil Survey of Contra Costa County indicates that the predominant soil type in the proposed expansion areas is Omni Silty Clay (Ob) which is "poorly suited to farming" due to salinity and poor drainage characteristics.[27] The University of California Extension Service in Pleasant Hill has confirmed that

the unfilled Acme lands have a very low potential for agriculture due to poor soils and the surrounding, potentially toxic land uses.[28]

9. Federal Aviation Administration Order 5200.5

Federal Aviation Administration Order 5200.5 is a policy guideline for siting new sanitary landfills. It establishes the policy of maintaining 10,000 feet between a landfill and any airport runway used by turbojet aircraft in order to avoid hazards to planes caused by birds that might be attracted to the landfill. The 156-acre southern parcel (Alternative C) generally falls within 10,000 feet of the northernmost runway at Buchanan Field, which is used by turbojet aircraft; the 200-acre area for Alternatives A and B falls just north of this line. (An approximation of the 10,000 foot line is shown in Exhibit G.) This Order is applicable to Buchanan Field.[29].

10. Executive Order B8881

Signed by Governor Brown October 13, 1981, this order directs the California Department of Health Services to initiate a program which would phase out and ultimately ban six highly toxic substances from landfill. Effective January 1, 1983, the six substances slated for restrictive action are: PCB's, pesticides, toxic metals, cyanide, halogenated organics, and non-halogenated volatile organics. The order also directs the DOHS to increase monitoring and enforcement inspections at all hazardous waste sites and establish special fees on the land disposal of all hazardous wastes, especially those on the high priority list.

11. Assembly Bill 2370

The California Department of Health Services, pursuant to Assembly Bill 2370 adopted February 15, 1980, as amended, prohibits expansion, opening or re-opening of any Classs I site within 2,000 feet of existing residences after August 6, 1980. DOHS expressly prohibited the disposal of Group 1 wastes on the 22-acre Acme parcel opened in 1981 and also on Acme's former Class I 20-acre site which is now inactive. Nearly all of the 156-acre southern parcel is within 2,000 feet of the East Vine Hill neighborhood. Acme Fill Corporation presently contests the applicability of this Bill in this situation, although both DOHS and the State Solid Waste Management Board feel it is applicable.

12. Suisun Marsh Protection Plan

This plan was prepared in 1976 pursuant to the Nejedly-Bagley-Z'berg Suisun Marsh Preservation Act of 1974. The Acme site is south of the Suisun Marsh planning area; however, offsite mitigation has been proposed within the area covered under the plan. BCDC is the land use permitting agency for major projects in the designated primary management area which encompasses 89,000 acres of tidal marsh managed wetlands, adjacent grasslands, and waterways. At this time, the specific location of the offsite mitigation area has not been identified. Therefore, no specific analysis of conformance with the findings and policies of the plan can be made.

13. General Plans and Zoning Ordinances

The Acme property and surrounding lands currently fall under the jurisdiction of Contra Costa County and its General Plan. In 1975 the County adopted a General Plan amendment for the Vine Hill - Pacheco Boulevard Corridor which designates the Acme lands as "Controlled Industry". Within this category the County zoning ordinance permits heavy industry including waste disposal sites.

Several other components of the County General Plan, including the Seismic Safety, Recreation and Circulation Elements, are applicable to the Acme Landfill area and are cited in appropriate discussions in this report.

The County has issued Land Use Permits to Acme for landfills in the existing fill areas. The exception is a largely-filled area of about 52 acres, located in the northwestern sector of the Acme site, which was inexplicably left out of the property description for the 1958 permit application. The 1958 permit also covers about 190 acres of the proposed expansion area. (See Section I.D, Regulatory and Permit Requirements and Status.) It should also be noted that Waterfront Road is designated as a scenic route by the County General Plan.

This area also falls within the Sphere of Influence of the City of Martinez which is currently considering annexation of the area. The Martinez General Plan designates these lands as "open space - conservation use land" with some heavy industry permitted. The City Zoning Ordinance suggests prezoning of the Acme lands as a combined Environmental Conservation District and Heavy Industrial District.

14. Subdivision Ordinance (Drainage)

Contra Costa County Ordinance Code, Section 8.2-2.014 requires the project to comply to requirements of Division 914 (Drainage) of the Subdivision Ordinance.

15. Contra Costa County Grading Ordinance - Acme Exempt

Under provisions of this Ordinance (Article 716-4.106(5)), a grading permit is not required for refuse and garbage disposal sites controlled by other regulations. The County Building Inspector concurs with this and states that the excavation and haul necessary to provide cover material for sanitary fill is exempt from the grading ordinance if otherwise performed in conformance with the land use permit. Also, Acme Fill was in operation well before the grading ordinance was adopted in 1960.[30]

16. Contra Costa County Refuse Disposal Site Ordinance

Chapter 418-4 (Health and Safety) Section 418-4.101 provides any permit issued under any prior County Ordinance is continued in effect by the operation of this section for the purposes of Section 418-4.008 (Permit

required), subject to the provisions of this chapter and subject to such regulations as may be established from time to time for operations under such permits. Acme Fill's land use permit was granted in 1958 well before 1972 when this ordinance was in effect. Therefore, the 1958 land use permit meets the criteria of this ordinance."[31]

17. Surface Mining and Reclamation Ordinance - Acme Exempt

The State Surface Mining and Reclamation Act exempts operations conducted to produce materials for on-site use ("on-site construction"). The Acme excavation and fill activities have therefore been exempted from the County Surface Mining and Reclamation Ordinance.

Footnotes

[1]Madrone Associates, Wildlife Habitat Evaluation Acme Fill Contra Costa County California, 1977.

[2]Dave Okita, Contra Costa County, Public Works Department, Environmental Control, telephone conversation July 15, 1982.

[3]Frank Boerger, P.E., Civil Engineer, Harding Lawson and Associates, telephone conversation, July 1982.

[4]Frank Boerger, telephone conversations July 19 and 22, 1982.

[5]Frank Boerger, telephone conversation July 14, 1982.

[6]Wil Bruhns, San Francisco Bay Regional Water Quality Control Board, telephone conversation July 15, 1982

[7]Contra Costa County, Public Works Department, Solid Waste Management Plan (Draft) December 1981, REvised January 1982, p. II-2.

[8]California Department of Health Services. A Summary of the California Hazardous Waste Management Program and State Plan, March 1981, p. 3.

[9]U. S. Environmental Protection Agency. 40 CFR 265.22 General Operating Requirements

[10]Frank Boerger, telephone conversation July 1982.

[11]Daniel Balbiani, Harding Lawson and Associates, telephone conversation, June 1982.

[12]Contra Costa County, Solid Waste Management Plan, Draft 12/81, Revision January 1982, pp. 8-5, 8-10, 8-13.

[13]Ibid., p. 8-10.

[14]Daniel Balbiani, telephone conversation, June 1982.

[15]Contra Costa County, Solid Waste Management Plan, Draft 12/81, Revision January 1982. p. 8-8.

[16]Letter to Dale Sanders, Contra Costa County Planning Department, from Nancy Wakeman, Bay Conservation and Development Commission, July 24, 1982.

[17]Letter of Response to Notice of Intent to Prepare an EIS, addressed to Col. Paul Bazilwich, Jr., San Francisco District, U.S. Army Corps of Engineers, from James J. McKevitt, Field Supervisor, U.S. Fish and Wildlife Service, dated July 21, 1981.

[18]Letter to Col. John Adsit, San Francisco District, U. S. Army Corps of Engineers, from James J. McKevitt, Field Supervisor, U. S. Fish and Wildlife Service, Sacramento, dated September 14, 1979.

[19]Memorandum of Understanding between Acme Fill Corporation and California Department of Fish and Game, September 10, 1980.

[20]Letter from E. C. Fullerton, Director, California Department of Fish and Game to Huey D. Johnson, Secretary for Resources, March 14, 1980.

[21]Letter from Alan W. Ford, Regional Director, National Marine Fisheries Service to Colonel Paul Bazilwich, Jr., District Engineer, Corps of Engineers, November 14, 1980.

[22]State of California Resources Agency, "Policy for Preservation of Wetlands in Perpetuity," September 19, 1977.

[23]Letter from . C. Fullerton, Op. Cit.

[24]Letter of Response to Notice of Intent to Prepare an EIS, addressed to Col. Paul Bazilwich, Jr., San Francisco District, U.S. Army Corps of Engineers, from James J. McKevitt, Field Supervisor, U.S. Fishand Wildlife Service, dated July 21, 1981.

[25]Letter to Contra Costa County Planning Department staff from Allan G. Bramlette, Assistant Coordinator, Northwest Regional Office, California Archeological Site Survey, dated July 30, 1981.

[26]Letter to Rube Warren, Contra Costa County Planning Department, from Allan G. Bramlette, Assistant Coordinator, Northwest Regional Office, California Archeological Site Survey, dated February 4, 1982.

[27]USDA Soil Conservation Service in cooperation with the University of California Experiment Station, Soil Survey of Contra Costa County, September 1977, pp 67-69.

[28]Telephone conversation with Mr. Ross Sandborne, University of California Extension Service, June 28, 1982.

[29]Federal Aviation Administration, Burlingame Field Office, John Soldek, Airport Certification Safety Officer, Telephone Conversation, 10 April and 19 July 1982.

[30]Contra Costa County Public Works Department, Memorandum From J. Michael Walford, Acting Public Works Director and A. A. Dehaesus, Director of Planning to Internal Operations Committee, March 3, 1981, p. 3.

[31]Ibid. p. 1.

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

INTRODUCTION

This chapter describes in detail Alternatives A, B, C, and D. The purpose and intent of Alternative E is provided with reference to Chapter IV which describes and evaluates that alternative in detail. Alternatives A and B include wetland mitigations measures. Alternatives A and B and probably C would require a Corps of Engineers' permit. Alternatives D and E are the Corps of Engineers' No Action alternatives because they would be the possible results of denial of Acme's current permit application. Only Alternatives A and B are mutually exclusive. Any other combination of alternatives discussed in this EIR/EIS is possible.

The Corps of Engineers has established categories by which an alternative may be defined. These categories are:[1]

i Within the capability of applicant and within the jurisdication of the Corps

ii Within the capability of applicant but outside the jurisdiction of the Corps

iii Reasonable, foreseeable but outside capability of applicant but within jurisdiction of Corps

iv Reasonable, foreseeable but outside capability of applicant and outside jurisdiction of the Corps.

On this basis, the alternatives are defined as:

Alternative A: i
Alternative B: i
Alternative C: i
Alternative D: iv
Alternative E: ii or iv, depending on the specific location of sites

NO PROJECT ALTERNATIVE

After initial consideration, the No Project, or Do Nothing, Alternative was eliminated from detailed study. On the basis of current rate of fill and landfill practices, Acme Fill's current site capacity is expected to be complete by 1983. As the only landfill that serves the central county and several additional communities, Acme manages almost two thirds of the waste generated in the county. (I. Introduction, B. Purpose and Need for the Project)

Diverting this material to the West Contra Costa Sanitary Landfill in Richmond could require a transfer station where the contents of several collector trucks would be packed into long-haul trailers for the long-distance haul to the landfill to reduce transportation time and costs. Alternatively, diverting the Groups 2 and 3 waste to the Contra Costa Waste Sanitary Landfill/Pittsburg Class II facility in Antioch would drastically diminish this facility's estimated

remaining capacity of 11 years to 1993. On the basis of current rates of fill of Groups 2 and 3 waste alone, approximately 1 year's tonnage now going to Acme would reduce the life of this facility by approximately 7 years. At the same time, an alternative site would have to be located for the Group 1 solid wastes. Moreover, when the Contra Costa Waste Sanitary Landfill/Pittsburg facility closes, it is expected that the waste will then be diverted to Acme.[2]

With Acme's current operational areas expected to be complete by 1983, approximately a year remains for a new disposal area to be ready to receive the 1500 tons Acme accepts on an average daily basis. Yet, selecting new sites for transfer stations and landfills is a complex undertaking that requires extensive planning. A multitude of technical, environmental, social, institutional, and economical factors must be considered and integrated into the planning process. The permit review process and the difficulty of current financing adds to the time required to implement such projects. Because of the complexity of such projects, the State Solid Waste Management Board recommends initiating plans for locating and developing a new land fill at least two years before an area's existing site is full.[3]

In reality, recently developed facilities in the Bay Area have taken as short a time as one and a half years to as long as 7 years to develop from initial planning to operational start-up. The Marin County Transfer Station, owned and operated by Marin Sanitary Services, Inc. of San Rafael, started operation in September 1981 after planning began early in 1980.[4] The facility and site had already been designated by the Marin County Solid Waste Management Plan in 1975.[5] In comparison, the planning was begun for the Oakland Scavenger San Leandro and Altamont facilities in late 1973/early 1974.[6] The Altamont landfill opened in late 1980 followed by the opening of the San Leandro Resource Recovery and Transfer Station in late 1981.

Even with material resource recovery and recycling and a waste-to-energy facility, a landfill would be needed to handle about half of the tonnage now going to Acme. Approximately 763 tons a day average would require a landfill. This amount would consist of bottom ash and other residues, material in excess of the waste-to-energy facility's capacity, and material by-passed when the facility is not in operation.

The No Project Alternative is not considerd reasonable or feasible in terms of Acme's current and expected future role in managing solid waste in Contra Costa County and the improbability for implementing alternative solid waste management facilities such as a landfill or transfer station within the time that Acme is expected to have exhausted its present remaining capacity.

ALTERNATIVE A - THE PROPOSED PROJECT WITH OFF-SITE MITIGATIONS

The project proposed by Acme Fill Corporation would expand landfill operations into a 200-acre area of Acme's 535-acre property enabling the company to continue its Class II-1 sanitary landfill operation when the present disposal areas reach capacity in 1983. The new operation area would provide landfill capacity to 1991[7] based on current rates of fill, compaction, and final slope.

The proposed landfill extension consists of two areas. One area, the Northeast Area, is an approximate 190-acre parcel located east of the existing 125-acre landfill operation. It is bounded by Waterfront Road and the Southern Pacific Railroad (SPRR) tracks on the north, Walnut Creek/Pacheco Creek Flood Control Channel on the east and south, and existing disposal operations on the west. The Northwest Area, an approximate 10-acre parcel, extends west of this area along the northern perimeter of Acme's property between the current 125-acre landfill and the Waterfront Road/SPRR alignment to Shell Oil property. (Summary Section Exhibit D1)

As part of the same permit application submitted to the Corps of Engineers 11 March 1981, Acme is requesting permission for the Contra Costa Flood Control and Water Conservation District to dispose of dredged material from the maintenance of the adjacent Walnut Creek/Pacheco Creek Flood Control Channel. Initially, approximately 500,000 cubic yards of this material would be hydraulically dredged by the District and spread over 110 acres in the Northeast Area. (Exhibit D1) The material would be allowed to dry and later used as a source of cover material for landfill operations. Less disposal and drying area would be required for subsequent dredgings which are estimated at 250,000 cubic yards every two years[8]. The actual area would be determined by the amount dredged and the requirements of landfill operations which are considered by Acme as having first priority. Ultimately, the entire 110-acre parcel would be used for landfill operations.

Of the proposed 200-acre project area, approximately 3.5 acres would be allocated as a buffer zone around the Central Contra Costa County Sanitary District's 72-inch sewer main which traverses the property. Another 4.0 acres surrounding the PG&E high-tension line concrete pads within the Northeast Area would be restricted from fill operations. With these buffer zones, approximately 192 acres would be left for landfill operations.

To compensate for the expected loss of wildlife habitat, seasonal wetlands vegetation, and lowland-grassland vegetation, an off-site mitigation area would be provided by Acme. A 160-acre restorable wetlands area would be purchased by Acme and managed by the California Department of Fish and Game.

The proposed project would continue to serve approximately 425,000 to 450,000 people from a service area which includes the central county as well as Antioch and the Rodeo Sanitary District. Benicia in Solano County is also served.

The proposed project would continue to accept an approximate total of 1500 tons[9] per day of primarily Group 2 household and commercial wastes and Group 3 construction and demolition debris. Included in this tonnage is approximately 180 tons a day of treated sewage sludge from Central Sanitary District's treatment plant. Also included is 50 tons a day of limited types of Group 1 solid wastes, as permitted by the San Francisco Regional Water Quality Control Board.[10,11] (Table 1)

Current landfill recycling/salvage efforts would continue.[12] At the Acme site, some cardboard, aluminum, various metals, and some glass are separated by hand and sold to processors. In addition, drop box newspaper pick-up service is provided by the Concord and Pleasant Hill-Bayshore Disposal Companies as part of their service. This material is baled and sold directly to processors without having to be hauled to the Acme Landfill.

Operations would continue 7 days a week with the site open to collection companies, private haulers, and the public from 7 am to 5 pm. The current complement of Acme personnel, which averages 21 people, would continue this operation.

As proposed by Acme, the landfill operation on the project site would be essentially the same as the current operation which is based on the formation of cells shown on the cover of this report. Current equipment or similar would be used to form these cells. Each cell, consisting of layers of waste compacted by heavy equipment, is enclosed by soil on all sides. A series of cells, approximately the same height, form lifts. Completed fills on terrain such as Alternative A usually have several lifts. Cell dimensions vary, depending on disposal rates, site conditions, and topography. Acme's current operations on the 125-acre site, are based on an average cell working face of approximately 200 feet by 200 feet compared to approximately 400 feet by 400 feet on the 22-acre southern site. Lift heights average about 20 feet with an overall completed site height of 40 to 50 feet. Final site height for Alternative A is currently planned for 40 feet with side slopes at 6:1 (horizontal to vertical), although this ratio may change. Ratio of refuse to cover material is planned at 9:1 to 10:1, although recent quarterly reports submitted to the Regional Water Quality Control Board for the current operations report a ratio closer to 4:1 to 5:1. In-place density is expected to be approximately 1200 pounds per cubic yard, similar to current density.[13] These specifications are the same as the assumptions adopted by the County Solid Waste Management Plan (Draft) in estimating Acme's future site life.[14]

Cover soil would be supplied by the dredged material drying area located on the Alternative A site and from a borrow area on Acme's southern property. Acme proposes to use the half million cubic yards or more of material scheduled to be dredged during the summer of 1983 after it has dried as the major source of cover material. To speed up the drying process, Acme would artifically agitate or disk the top crust. Until the dredged material is available for cover operations, soil would be taken from a borrow area on the southern property, as shown in Summary Section Exhibit D1. This area lies west of the existing 22-acre operations and south east of the hills which separate the Acme property from the East Vine Hill neighborhood. Acme proposes to stay east of the ridgeline to avoid disrupting the visual barrier formed by the hills and the slope easements for the Contra Costa County Water District tanks.[15] During the dry season, cover soil is moved from this borrow area and stockpiled in areas near the working face. The location of the stockpile changes with the landfill operations so that cover material is convenient to operations.

Litter would continue to be controlled by portable screens used on site where required by operations, hand collection by Acme crews, berms created by stored cover material, and perimeter fencing. Energy consumption, including fuel for equipment and electricity, would be consistent with current site use. Security would be similar to current security measures described in III.H. Public Health and Safety. Safety practices and equipment would be maintained for site personnel and visitors to the site.

Construction required for the proposed site would consist of 3 reinforced concrete bridges to span the sewer line and 20,000 feet of levees. As part of the proposed project, Acme is considering relocating the entrance to the northwest corner of the property in the vicinity of Waterfront and Industrial Access roads. A scale for weighing incoming loads is to be installed at the re-located entrance.

Feasibility studies would be needed to determine the potential for methane recovery with Alternative A. Methane now being piped from the current 125-acre site operations to the Getty Synthetic Fuels processing plant on Acme's property is expected to generate from 7 to 14 years. Alternative A in no way affects the current methane processing operations.

Fill areas on the proposed project site, sequence of operations, final site contours, on-site building and road locations would be included in the Operations Plan which is being prepared by Harding Lawson and Associates for Acme Fill Corporation. That report is being reviewed by Acme. Contingency and Closure Plans are not available.

ALTERNATIVE B - REDUCED LANDFILL PROJECT WITH ON-SITE MITIGATIONS

In this alternative only a portion of the expansion area proposed in Alternative A would be used to continue the Class II-1 landfill operation. Of the 200 acres, 100 acres of existing and former wetland would be reserved for on-site mitigation. The off-site compensatory area described as part of Alternative A would not be included. The dredged materials project would also not be included as part of this alternative. Dredged materials from Walnut/Pacheco Creek would have to be disposed at another site, selected by the Contra Costa County Flood Control and Water Conservation District. Possible alternative disposal sites include the previously used disposal site located on the United Towing Company property across Waterfront Raod from the Acme site; a diked, 20-acre area located north of Waterfront Raod and east of Walnut/Pacheco Creek on Tosco Company property; and the designated Carquinez Straits aquatic disposal site. Both the United Towing and Tosco sites are outside of Corps of Engineers jurisdiction. The impacts of using alternative disposal sites are beyond the scope of this EIR/EIS.

Considering the 3.5 acres allocated as a buffer zone around the Central Sanitary District sewer main approximately 96.5 acres would be available for disposal operations.On the basis of current rate of fill, compaction, and final slope, the reduced area would provide disposal space for approximately 3 years to 1986. (Summary Section Exhibit D2)

Alternative B would serve the same service area and accept the same waste as provided by Alternative A. Acme's current recycling/salvage efforts would continue. Operational hours, personnel, disposal practices, equipment, cover supply, litter control, energy use, and security and safety procedures would also be essentially the same as those in Alternative A. Cover material would be supplied entirely by the borrow site on the southern property.

Related construction would consist of 3 reinforced concrete bridges to span the sewer main and 10,000 feet of levees. It is not known whether a relocated entrance with weighing equipment would be included by Acme as part of this alternative.

The potential for methane recovery in the landfill expansion area would require feasibility studies. Since the landfill disposal area would be approximately half of the area used for Alternative A, methane generation could be expected to be correspondingly less. Implementation of this alternative in no way affects the current methane recovery operation.

ALTERNATIVE C - LANDFILL DISPOSAL ELSEWHERE ON ACME PROPERTY

Alternative C would shift Acme's landfill operation to the southern portion of the Company's property instead of moving operations from current disposal areas when necessary in 1983 to the 200-acre parcel described in Alternatives A and B. The dredging project included in Alternative A would not be included in Alternative C. Dredged mateiral from Walnut/Pacheco Creek would be disposed at another site as in Alternative B. The inactive 20-acre Class I site was excluded from consideration as part of Alternative C primarily because of its current indeterminate status and potential for exclusive disposal of Group 1 wastes. These matters are under discussion and study by Acme, the DOHS and the RWQCB. The extremely limited estimated capacity of 4-6 months further restricts the feasibility of this site as a viable part of Alternative C. (I. Introduction, B.2.) On the basis of the current rate of fill, compaction, and final slope, this area would provide disposal facilities for approximately 2-1/2 years to 1985.

The southern portion of Acme's holding is an irregularly shaped 178-acre area which contains the current 22-acre operations area. This leaves approximately 156 acres, bounded on the northwestern corner by IT Corporation's Class I disposal site; on the northeastern corner by the Martinez Gun Club; on the east by Pacheco Creek Channel and Henry's Tree Service; on the south by the Atchison, Topeka, and Santa Fe Railway (AT&SF), and on the west by the Contra Costa Canal and the Vine Hill neighborhood. A 275-foot hill on the western side of the parcel is a visual and acoustical barrier for the residential neighborhood in the northern part of this area. An adjacent 140-foot hill is capped by 2 Contra Costa County Water District Storage tanks. (Summary Section exhibit D3)

At the present time, the 22 acre portion of this area is being used for Group 2 wastes during the dry season. Group 1 waste is specifically prohibited by the Interim Status Document issued by the California Department of Health

Services. The northern portion of the site in the vicinity of Acme's Class I site and the Martinez Gun Club is also in use as a borrow area for cover soil used in current fill operations. The new borrow area would be located immediately west of the 22-acre site.

Topographic constraints and utility easements, leave approximately 40 acres of this parcel as suitable for continuing effective landfill operations. Easements for the Martinez sewer connector, high-voltage transmission lines, telephone lines, and oil and gas pipelines cross this area and the Contra Costa Water District has a 5.5-acre parcel within the property.

Use of a portion of this site would probably require a permit from the Corps of Engineers because portions of the area are located below the elevation of former mean high water and/or contain wetland indicator species. It would also require demolition of ranch buildings owned by Acme and relocation of the ranch operation.

Alternative C would include all other disposal-related activities as provided by Alternative A and B. It would serve the same service area and accept the same waste as provided by Alternatives A and B. Acme's current recycling/salvage efforts would continue. Operational hours, personnel, disposal practices, equipment, cover supply, litter control, energy use, and security and safety procedures would also be essentially the same as Alternatives A and B.

Related construction would consist of an undetermined footage of levees. It is not known at the present time whether a relocated entrance and scale would be part of Alternative C.

The potential for methane recovery in the landfill expansion area would have to be determined by future feasibility studies. Implementation of this alternative in no way affects the current methane recovery operation.

ALTERNATIVE D - OTHER METHODS OF DISPOSAL
(NO CORPS OF ENGINEERS ACTION)

To reduce the amount of solid waste going to landfills, a comprehensive approach with 3 elements is possible. Neither the alternative as a whole nor any of the individual elements would be operational in time to extend Acme's current site life beyond 1983. A landfill would be required for materials not recycled or burned, for ash residue, and back-up for waste-to-energy facility maintenance. These elements, which are based on methods contained in Part I - Planning Statements of the December 1981 Draft County Solid Waste Management Plan are:

1. Waste Reduction

Decreasing the quantity of material that reaches the solid waste stream, or waste reduction, can be accomplished by four major methods: reducing materials, such as packaging, that are not strictly integral to consumable

goods, increasing the lifetime of durable goods such as appliances, substituting re-usable products such as ceramic dishes for throwaway paper plates, and simply buying less.

Changes in advertising and marketing, which affect product packaging, and increasing product longevity, which requires a shift in the philosophy of "built-in obsolescence" and corresponding adjustments in design concepts and manufacturing methods, are efforts best pursued by marketing specialists and manufacturers. Regulatory action, if required, would be appropriate on the federal and possibly, state, levels.

The waste reduction element of this alternative, then, focuses on the two approaches that can be handled effectively at the county level substituting re-useable products for throwaway items and buying less. It would rely on the use of public information programs to emphasize the need for people to use durable rather than disposable goods and to reduce purchases whenever possible. It would be implemented by announcements included in monthly solid waste collection billings similar to utility newsletters sent with monthly statements, newspaper supplements, and special events including school programs for children.

2. Material Recovery

The material recovery and recycling element is a major component of Alternative D which would include a central processing center which would support curbside collection, buy-back, office paper, donations, and satellite programs. Material collection would focus on newsprint, magazines, glass, wine bottles, aluminum cans, and bimetal or "tin" cans.

Materials would be brought to a central processing center as described in the County Plan for further sorting, cleaning, and market preparation. The center could be patterned on the E.C.ology Recycling Center, a successful venture operating in El Cerrito and serving the western part of Contra Costa County in El Cerrito and Kensington, and Albany in Alameda County. Such a center would perform a variety of functions: 1) a depository for residential curbside collections of recyclables; 2) a center for purchase (buy-back) operations; 3) a drop-off place for donations of recyclable items; 4) a center for commercial office papers collections; 5) a headquarters to receive materials from satellite collection areas such as large condominiums or apartment complexes as well as regional shopping centers. A processing center could also accept a wider variety of material than is possible in curbside recycling - for example, plastic beverage bottles, cardboard, wood, yardwastes, textiles, rubber, and leather.

In addition to traditional activities, a central processing center could also serve as:

a) a collection area for Goodwill and similar charitable donations for items such as clothing, furniture, bric-a-brac, to provide one-stop

recycling for the convenience of people who sell or donate other recyclables to the processing center, and

b) a collection area for high-grade recycling to recover certain materials with high monetary or environmental value. These materials include aluminum, such as lawn furniture and cooking utensils; copper utensils, wiring and fixtures; brass fixtures and trims; cast iron such as auto parts and machinery; steel including old tools and auto parts; and household appliances. These materials would be sorted, cleaned, and marketed. Acme conducts such a program at the landfill by contract to a subsidiary. That program would be increased with more materials and articles such as construction wastes, plastics, and rubber tires culled from the waste stream. (To avoid infringing on existing salvage and recycling operations, consideration should be given to salvage and recycling that is now accomplished by private businesses and salvage companies.)

Closely related to any recycling program are supportive ordinances and fee structures. The Solid Waste Commission is developing a Model Solid Waste Ordinance which will consider curbside collection. Financial support for recycling through franchise fees, as stated in the County Soiid Waste Management Plan, would be left to the discretion of local government.

3. Waste-to-Energy Facility

This element of Alternative D would be coordinated with the Material Recovery effort. Once recyclables have been separated from the waste stream, the remaining portion would have potential for waste-to-energy conversion. This element is based on a waste-to-energy facility as planned by Central Contra Costa Sanitary District and described in the County Solid Waste Management Plan. This project consists of two components: Title 1 and Title 2. Each component has a different capacity and can be implemented separately or together. Title 1 would incinerate approximately 116 tons per day of municipal solid waste from the Acme landfill in retrofitted furnaces with approximately 180 wet tons a day of sludge to provide by-product energy for use in-plant or possible export. Title 2 would use an additional 884 tons per day in waste-to-energy conversion facilities based on mass burning waterwall boiler technology. Title 1 and 2 facilities combined would divert approximately half of the current daily tonnage from Acme's service area. Title 2 would generate 20 megawatts of electricity for sale with PG&E targeted as the prime energy market.

Approximately 763 average tons per day of ash residue from mass incineration and by-passed solid waste would require landfilling at Acme or another landfill.

ALTERNATIVE E - EVALUATION OF OTHER AREAS FOR LANDFILL (NO CORPS OF ENGINEERS ACTION)

Contra Costa County in conjunction with the Corps of Engineers selected five areas to be evaluated for relative suitability of operating a sanitary landfill. Four areas are located in Contra Costa County, and a fifth area is the existing Altamont Landfill operation in Alameda County. (Summary Section Exhibit D4) Specific sites within the four areas have not been identified. Therefore, the analysis is necessarily limited to a general discussion because of the large areas involved.

Dredged material disposal would not be included as part of this alternative. The County Flood Control and Water Conservation District would need to locate a separate disposal site for dredged materials from Walnut/Pacheco Creek as in Alternative B.

To avoid confusion of this alternative with Alternatives A through D, the analysis of these five areas is included as a separate section in this report. A matrix indicating relative suitability and rank of these five areas based on various environmental and cultural considerations has been used to summarize the analysis. This analysis is included in Chapter IV, Evaluation of Other Areas for Landfill Use.

Footnotes

[1]United States Department of the Army, Corps of Engineers. Memorandum ER 200-2-2, paragraph 14.b.(5)(b).

[2]Contra Costa County, Public Works Department. Solid Waste Management Plan Final Draft, December, 1981 with Revisions, January 1982.

[3]State Solid Waste Management Board. Sanitary Landfill Site Selection/Alternatives to Landfills. Seminar Manual. Fall 1980.

[4]Guido Zanotti, President, Marin Sanitary Service, Inc., Telephone Conversation, 19 July 1982.

[5]Mark Kostielney, Marin County, Environmental Health, Telephone Conversation, July 20, 1982.

[6]Sam Clark, Engineer, Oakland Scavenger Company, July 19, 1982.

[7]Harding Lawson and Associates. Memorandum to Torrey & Torrey, Inc., March 11, 1982.

[8]Contra Costa County Flood Control and Water Conservation District, Mr. Milton Kubicek, Acting Deputy Director, Operations and Flood Control.

[9]Current generation. Future generation projections provided in Economics Section Table 10.

[10]Acme Landfill Corporation, Telephone conversations with Daniel Balbiani, March 30, April 5.

[11]See Economics Section, Table 6 for itemized list of types of wastes.

[12]See Resource Conservation and Recovery Section for current recycling efforts.

[13]Daniel Balbiani, Harding Lawson and Associates, Telephone Conversation, June 23, 1982.

[14]Contra Costa County, Public Works Department, Solid Waste Management Plan, p. 8-10.

[15]Frank Boerger, P.E., Civil Engineer, Harding Lawson and Associates, Telephone Conversation, July 13, 1982.

III ENVIRONMENTAL SETTING, IMPACTS AND RECOMMENDED MITIGATIONS

A. LAND USE

Setting

1. Physical Environment

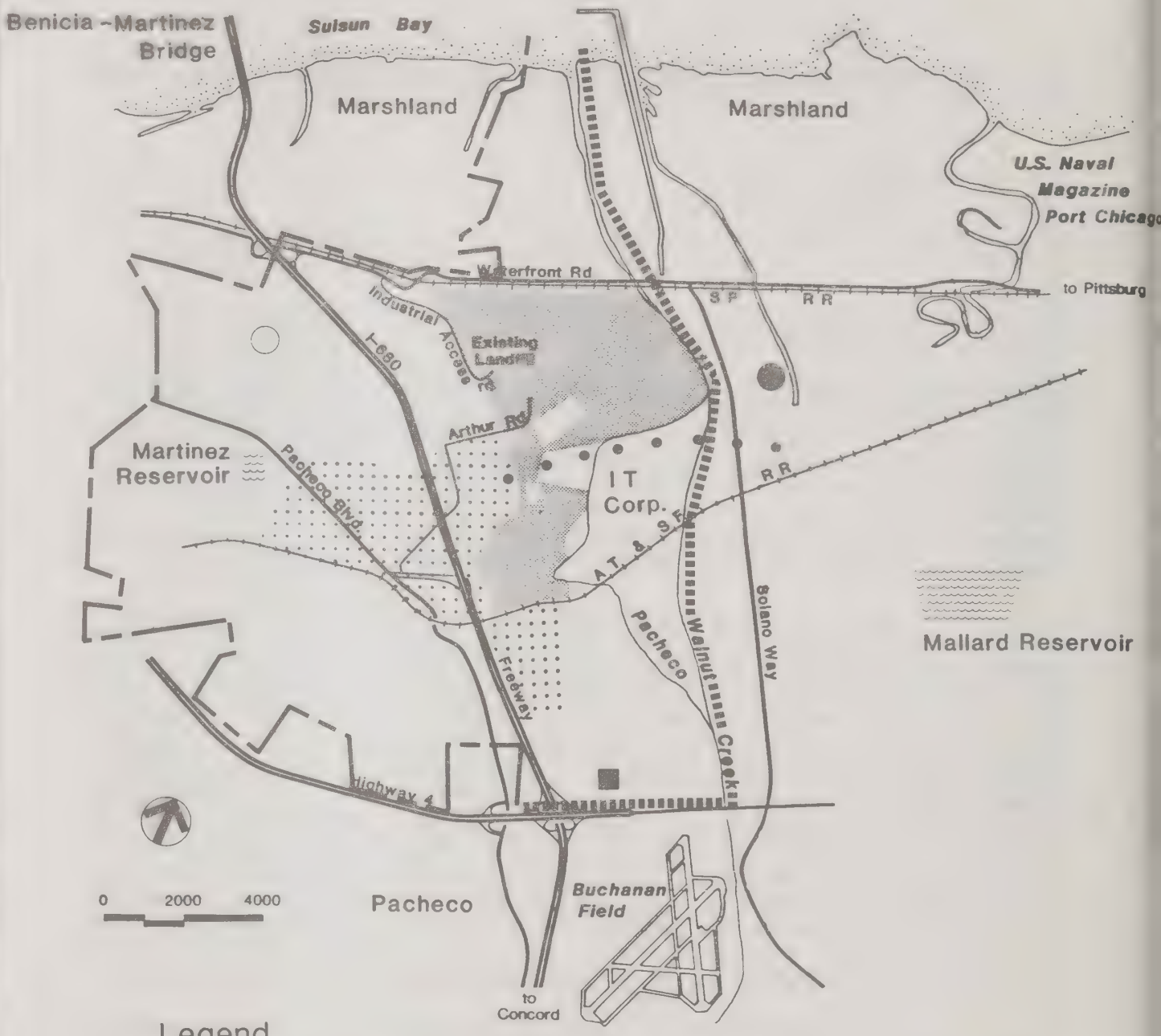
The Acme Fill Corporation property is a 535-acre tract on the southern edge of the Suisun Bay marsh lands. (Exhibit G) It is about 3 miles east of central Martinez and about 3 miles west of the U. S. Naval Weapons Station at Port Chicago. The east side of the property borders the Pacheco Creek-Walnut Creek channel which flows north to Suisun Bay. Most of the property is isolated from the tidal action of the Bay by levees which run along the north and east boundaries, although a tidal gate at the northeast corner and a low point at the southeast corner allow seasonal flooding of portions of the site.

The north levee forms the bed of the adjacent Southern Pacific Railroad tracks and Waterfront Road, a parallel, two-lane, east-west arterial that joins Interstate 680 about 1/2 mile west of the Acme site. The east levee runs along the west edge of the Pacheco Creek channel. The western edge of the property is formed by a series of hills which screen views of the site from Highway 680 and the Vine Hill neighborhood to the west. The south end of the property, near the upstream end of the Pacheco Creek channel, borders the Atchison, Topeka and Santa Fe Railway right-of-way. Vehicular access is gained from Waterfront Road via a newly constructed industrial access road along the northwest boundary of the site. The industrial access road, a County-maintained road, was opened in February 1982 and primarily serves as a route for truck traffic to and from the Acme Landfill and the adjacent IT Corporation liquid waste disposal site. Waterfront Road joins Interstate Route 680 about 1/2 mile west of the Acme site. The Buchanan Field airstrip at Concord is about 6500 feet southeast of the southern property line.

Summary Exhibit C shows the property and immediately surrounding lands in more detail. Currently, fill operations are limited to a 125-acre area in the northwest portion of the site and a recently opened, 22-acre area beside the Pacheco Creek channel. At present, the 22-acre site is filled during dry-weather periods. The 125-acre fill area has been filled to elevations of about 40 to 80 feet above the original ground level. Exterior fill slopes are generally 5:1 (horizontal to vertical). This area accepts residential and commercial wastes, construction and demolition debris and certain, relatively inert toxic (Group 1) wastes.

The source of cover material for fill operations is a borrow pit in a hillside on the west boundary of the property. Further excavation at the pit is limited by the proximity of two Contra Costa Water District water storage tanks on the hill top and the east Vine Hill neighborhood.

A 20-acre, triangular parcel owned by Acme was leased to the nearby IT Corporation during the 1960's for use as a Class I liquid waste disposal site.



Legend

- Acme Property
- Vine Hill Residential Area (includes Blum Road Residential Area)
- Martinez City Limit
- Martinez Sphere of Influence
- 10,000 Feet from Buchanan Field
- Sewage Treatment Plant
- Shell Oil Refinery
- Tosco Refinery

TORREY & TORREY INC. environmental/urban planning and design	Land Use Setting	EXHIB G

RREY & TORREY INC.
environmental/urban
planning and design

Utilities and Easements

EXHIBIT H

Although IT ceased use of this parcel in the late 60's, the evaporation beds, which contain sludge, are still present and frequently fill with rainwater during the wet season. The west end of the parcel is currently used by Acme for vehicle parking and as a recycling/salvage area in conjunction with the ongoing landfill operations.

The two remaining Acme parcels are essentially undeveloped. The large parcel between the existing fill area and the creek channel (the 200-acre, proposed expansion area) is a low, flat area which contains about 91 acres of seasonal wetlands and about another 95 acres of lowland-grasslands. About another 15 acres is occupied by levees and maintenance roads. This parcel is also crossed by a 72 inch sewerline and two overhead power lines (shown in Exhibit H) The northern powerline is a low-voltage line which could be relocated; the other is a high-voltage line on steel pylons and concrete pads which cannot be moved. Both powerlines are owned by PG&E. The sewer line is the principal outfall for the Central Contra Costa Sanitary District treatment plant south of the AT&SF Railway right-of-way. This line empties into Suisun Bay to the north. The line has been relocated due to an earlier movement caused by slippage of the adjacent landfill. About 3.5 acres around this line would not be able to be filled, in order to avoid further damage to the sewer line.

The majority of the remaining 178-acre southern parcel (156 acres without the existing 22-acre landfill), is characterized by hilly terrain. However, there is a low, relatively flat area at the southern end where a creek crosses the property and drains into the Pacheco Creek channel. This area is used principally for cattle grazing. A cluster of farm buildings is located on the hillside in the southwestern corner. A road easement bisects the southern portion of this parcel, connecting the AT&SF right-of-way with Central Avenue in the Vine Hill residential neighborhood. (see Summary Exhibit C) The existing borrow pit is located at the north end of this parcel.

The Acme property surrounds or partially surrounds several other parcels. IT Corporation owns a parcel of about 25 acres where Class I liquid wastes are processed in boilers and pumped to evaporation ponds elsewhere on the parcel and on a large tract across Pacheco Creek. The Martinez Gun Club owns and operates a shooting range on a 30 to 35-acre flat area near the creek. Henry's Tree Service owns a 7-acre parcel along Pacheco Creek where lumber is cut, stacked and sold for firewood. A small, wooden office and storage structure are located on the lot. A portion of the lot is also used as a storage site for septic tanks. The Central Contra Costa Water District owns a parcel on the ridge line in the southern area where 2 water storage tanks are located. The tanks, as part of a wastewater reclamation system, hold water for industrial use. Effluent treated by Central Contra Costa Sanitary District's treatment plant near Highway 4 is pumped via a pipeline in an easement in Acme's 156-acre parcel to Contra Costa County Water District's ion exchange softening plant (25 mgd capacity). Due to start-up difficulties the softening plant is not yet functional but water is being stored in the tanks and pipeline.

The land uses which surround the Acme property are described below and indicated on Exhibit G.

To the west. The Contra Costa Canal, a partially subterranean and partially open concrete channel which carries water, via several siphons, to the Martinez Reservoir at the west end of the Vine Hill residential neighborhood. This water is used as City drinking water.

The East Vine Hill neighborhood, located between the southern Acme parcel and Highway 680 has approximately 300 dwelling units, predominantly single-family units built in the 1950's and 60's. The ridgeline on the Acme parcel serves as a visual and noise barrier between this neighborhood and the landfill operations. Until the recent opening of Industrial Access Road, truck traffic from Acme and IT Corporation used Arthur Road through this neighborhood as the primary access route to and from Highway 680. When the new access road was opened, Arthur Road was permanently closed at the entrance to the landfill. A secondary access to the Acme property and Henry's Tree Service from Highway 680 is Central Avenue through the East Vine Hill neighborhood, although this route is not used for waste disposal traffic. The remainder of the Vine Hill neighborhood, including an elementary school, lies west of Highway 680.

Shell Oil, which operates a refinery on the west side of Highway 680, owns a vacant tract of about 200 acres between the existing landfill and the freeway. A ridgeline running the length of the parcel on the east side screens the landfill from views along the freeway. The western half of this property is a seasonal wetland. The land is currently used for cattle grazing. Shell Oil has no immediate plans for developing this property.

To the north. This area is mostly Bay marshlands with large intermittent filled areas. Only two parcels are developed. One parcel, near the intersection of the new industrial access road and Waterfront Road contains large oil and gas storage tanks owned by Land-Sea Corporation. Directly north of the existing landfill is an auto-wrecking yard. Waterfront Road and Southern Pacific Railroad cross the Pacheco Creek channel on bridges near the northeast corner of the Acme property. The mean high-water mark of Suisun Bay is about one mile north of the property line.

To the east. The Tosco oil refinery is located across the Pacheco Creek-Walnut Creek channel. The refining operations are located near Waterfront Road; the main storage tanks are located south of this area. A spur of the Southern Pacific Railroad runs north-south through the refinery area. East of the refinery are mostly marshlands and open grasslands owned by Tosco, and the 168-acre Mallard Reservoir operated by the Central Contra Costa Water District. Further east are the Concord Naval Weapons Station and the Port Chicago Naval Magazine. Directly across the Pacheco Creek channel from the southern Acme parcel, on the spit of land between the two creek channels, are the IT Corporation's evaporation ponds for treated Group 1 wastes.

To the south. Directly south of the southern Acme parcel is an open hilly area beyond which is a single-family residential neighborhood. East of this area is the large tract owned by the Central Contra Costa Sanitary District. The sewage treatment plant is located at the southern end of this parcel near Highway 4. South of Highway 4 is Buchanan Field. West of Highway 680 south of the Acme property is a low density, single-family hillside residential area which is an extension of the Vine Hill neighborhood.

2. Policy Setting

The plans, policies, laws, and regulations affecting the project site are described in Section I.E. Particular restrictions which these policies may place on the Acme property are summarized in the following paragraphs. The compatibility of the proposed project and its alternatives with these restrictions are subsequently discussed in this section under "impacts."

Local plans and zoning.

The site lies within an unincorporated area of Contra Costa County, just east of the City of Martinez. The County's General Plan and zoning ordinance permits heavy industry, including solid waste disposal sites, on this property. Most of the proposed expansion area is covered by County Land Use Permit 615-60, issued in 1958, which permits solid waste disposal on the site. The General Plan also designates Waterfront Road as a scenic route.

The site also falls within the Sphere of Influence of the City of Martinez which is currently considering annexation of the area. The Martinez zoning ordinance suggests prezoning of the Acme lands as a combined Environmental Conservation District and Heavy Industrial District.

Wetlands policies.

Because the proposed expansion area includes a wetland, several Federal and State agencies have special jurisdiction, or a review mandate, in matters concerning use of the site. These agencies include the U.S. Army Corps of Engineers, the Environmental Protection Agency, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the California Resources Agency, and the California Department of Fish and Game. In general, the policies of these agencies advise against or prohibit the issuance of permits which allow the filling or destruction of wetlands where a practicable non-wetland alternative exists. In some cases such permits are issued if an off-site wetland of roughly equivalent size is restored to provide an equivalent or greater value in terms of wetland habitat. (See Sections I.D., I.E. and III.D.) Because filling of the wetland would require a Department of the Army Permit under Section 10 of the River and Harbor Act and Section 404 of the Clean Water Act, the Corps of Engineers is the lead federal agency responsible for coordinating the concerns of the various federal agencies involved.

In addition to concerns about the loss of wetland habitat due to filling, many of these agencies also have concerns about leachates from the fill contaminating nearby water courses and the Suisun Bay. These concerns are addressed in Sections III.C. and III.D.

Other policies.

California Assembly Bill 2370 prohibits the location of Class I disposal sites within 2000 feet of residences. The 2000 foot limit measures from the Vine Hill residential area would include most of the 156-acre southern parcel. Under AB2370 the California Department of Health Services prohibited disposal of Group 1 wastes on the 22-acre Acme parcel opened in 1981 and also on Acme's former Class I 20-acre site which is now inactive. (Acme Fill Corporation contests the applicability of this Bill to the Acme landfill.)

Federal Aviation Administration Order 5200.5 establishes a guideline of maintaining 10,000 feet between any airport runway used by turbojet aircraft and new sanitary landfills to avoid hazards to planes which might be caused by birds attracted to landfills. Most of the 156-acre southern parcel falls within 10,000 feet of Buchanan Field, in Concord, which is used by turbojet aircraft.

Impacts

The primary land use impact of Alternative A would be the conversion of a large, restorable marsh area to industrial use (landfill), including the destruction of about 95 acres of wetlands. The project would be consistent with the Contra Costa County General Plan and with the Martinez General Plan and Zoning Ordinance. It would not be prohibited by AB2370 or by FAA Order 5200.5. The existing sewer pipeline and the PG&E high-tension line would restrict placement of fill in portions of the site.

Alternative B would also convert an open tract to industrial use (landfill) but could preserve a majority of the 95-acre wetlands area. The landfill capacity of this alternative would be about half that of the proposed project. This alternative would also be consistent with local planning policy and would not be prohibited by either AB2370 or FAA Order 5200.5. The existing sewer pipeline would restrict placement of fill somewhat.

Alternative C would fill portions of the southern parcel. Placement of fill would be restricted by existing road and utility easements and would require filling a minor wetlands area at the southern end of the parcel. The majority of this parcel would also fall within areas potentially restricted by AB2370 and FAA Order 5200.5. The acceptance of Group 1 wastes for this alternative would be subject to California State Department of Health Services approval.

Alternatives A, B, and C would expand landfill operations in a generally industrial environment and would have no adverse effect on these surrounding industrial uses. The area of primary sensitivity to adverse impacts is the interface of the excavation and fill operations with the Vine Hill residential

neighborhood. Visual, noise, dust, smell and nuisance impacts on this neighborhood would be severe if Acme were allowed to remove the two hills in the southern parcel or lower their ridgelines. Because all waste disposal traffic would use the new Industrial Access Road, traffic from Alternatives A, B, and C would not affect the Vine Hill residential neighborhood.

Mitigations

Measures which would mitigate the conversion of wetlands, the primary land use impact, have been incorporated in the proposed project and its alternatives. Alternative A, for example, would restore a marshland at an off-site location; Alternatives B, C, and D would allow on-site mitigation of wetland impacts.

For Alternatives A, B, C, and D, the ridgelines of the two existing hills in the southern parcel should remain intact. Any excavation for cover should occur on the sides of the hills opposite the residential area. If such excavation should occur care should be taken to prevent sloughing of the ridgelines.

B. EARTH: GEOLOGY, SOILS, AND SEISMICITY

1. Geology

Setting

The 535-acre Acme property varies in elevation from approximately elevation 0 in the northeastern area to approximately 180 feet at the top of Vine Hill in the southern area. The 200-acre area proposed for expansion in Alternatives A and B is bordered by Walnut and Pacheco Creeks on the east. Levees separate the low-lying portions of the site from the creeks. Two transmission line towers are located on the southeast portion of this area and a wood pole power line is located on the eastern side. Formerly a Central Contra Costa Sanitary District (CCCSD) sewer line coincided with the boundary between the 125-acre existing landfill and the Alternatives A and B area. A slope failure displaced this line approximately 40 feet to the east in October 1978. Subsequently, the pipeline was relocated east of where the slope failure occurred. (Exhibit I)

Topography in the 178-acre southern parcel is quite variable and ranges from low-lying marsh areas on the southeast to the 280 foot-Vine Hill elevation in the northwest. Three Contra Costa County Water District tank pads are located on the ridge of the hill and a cover material borrow pit for the existing Acme operations is provided by the northeastern face of the hill. A ranch with related facilities is located on the southern portion of this area. Easements for the Martinez sewer connector, high voltage transmission lines, telephone lines and oil and gas pipelines also cross the southern portion. Levees on the southeast boundary are part of the Pacheco Creek Flood Control channel. Due to the topographic constraints and utility easements, only 40 acres of this parcel are considered suitable for continuing landfill operations.

There appears to be little or no interest in oil, natural gas, or mineral resources beneath the site as evidenced by the lack of exploratory drilling and production from wells in the area.

The Acme site is located in the Coast Range physiographic province which is a series of northwest trending mountains and valleys. The Coast Ranges have undergone a complex geologic history including periods of sedimentation, folding, faulting, uplift, and erosion. The Carquinez Straits to the north of the site were eroded through the East Bay Hills as the hills were being elevated in Late Tertiary time[1]. (A Geologic Time Scale is included in the Earth Appendix, Exhibit 1.) These straits connect with San Francisco Bay water. Alluvial and marsh deposits, or Bay Mud, in varying amounts overlie bedrock and are exposed at the surface over most of the 535-acre site. Bedrock consists of sedimentary rocks of Cretaceous age known as the Panoche Formation. Bedding planes strike north to northwest and generally dip between 50 degrees west to vertical in the site area. Depth to bedrock varies from surface exposure to more than 100 feet.

No bedrock is exposed at the surface in the 200-acre area of Alternatives A and B. Quaternary surficial marsh deposits of Bay Mud cover the entire area. These are underlaid by alluvial silts and clays. Bedrock consists of sedimentary rocks of Cretaceous age known as Panoche Formation. Bedrock has not been encountered in test borings (the deepest of which was 96 feet) performed to date on this 200-acre area[2].

The geology of the 178-acre Alternative C site can be divided into two distinct areas. One is an upland area of Cretaceous and Paleocene marine sandstone, shale, and siltstone. The other is a lowland area of Quaternary alluvial and colluvial deposits and Bay Mud. The upland area rises to an elevation of approximately 280 feet at Vine Hill, with moderately steep slopes developed. The lowland areas are essentially flat with elevation at or near sea level. The Quaternary lowland deposit reaches a thickness of up to 60 feet[3].

The Acme site area, based on published geologic maps, is not within any zones of active volcanism.

Tsunami and seiche hazards at the 535-acre Acme site are considered very low to negligible.

Impacts

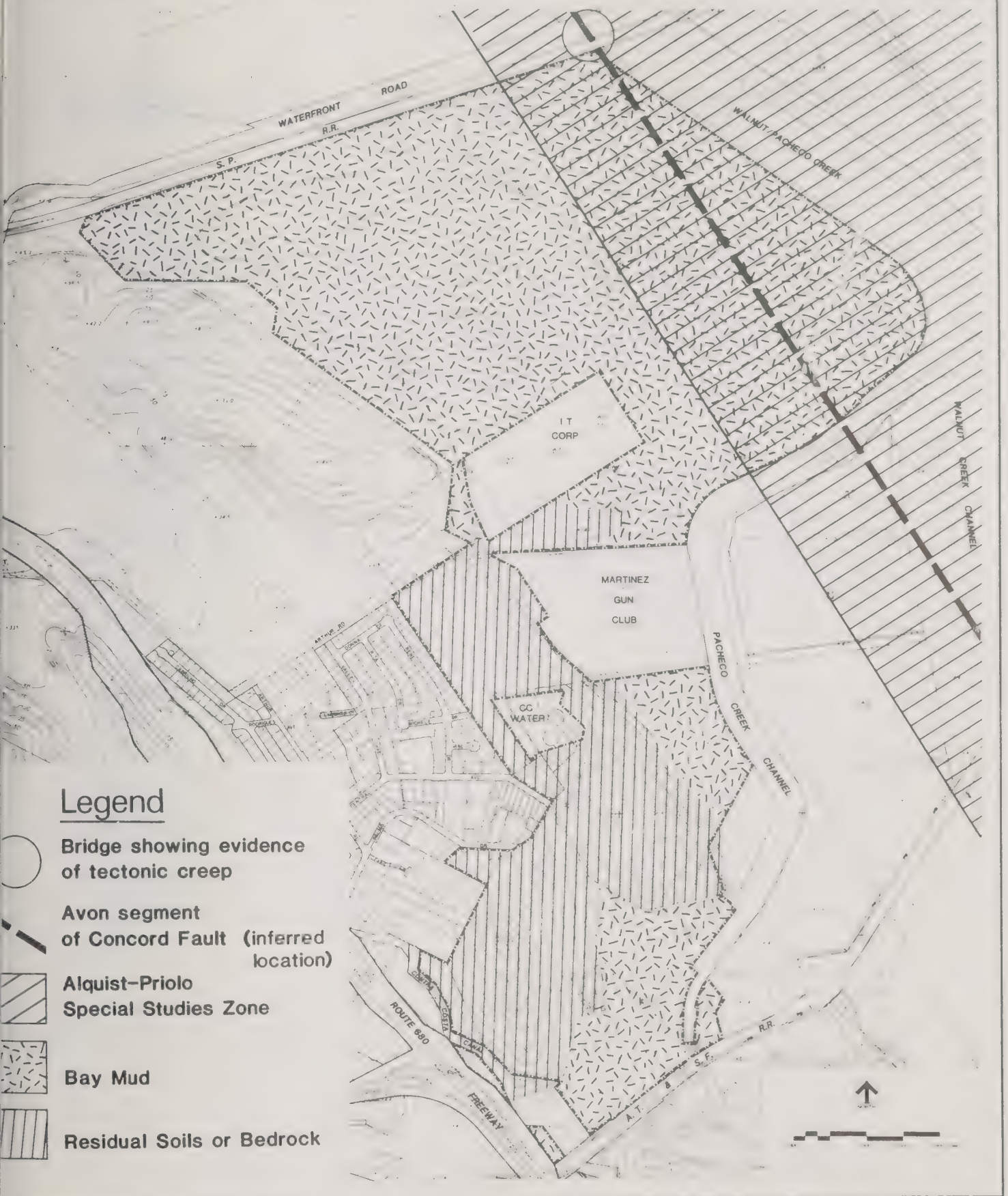
California Criteria for landfills states:

> "Class II-1 sites are those overlying usable groundwater, and geologic conditions are either naturally capable of preventing lateral and vertical hydraulic continuity between liquids and gases emanating from the waste in the site and usable surface or groundwaters, or the disposal area has been modified to achieve such capability."[8]

The geologic material (Bay Mud) underlying the proposed expansions in Alternatives A and B is between 40 and 60 feet in thickness. Harding Lawson Associates has concluded that the Bay Mud should be relatively impervious to vertical downward migration of liquids. If discontinuities such as sand lenses or other soil changes are encountered during site preparation, these should be overexcavated and backfilled with clay soil. Wtih proper engineering practices, the proposed perimeter levees would effectively prevent lateral movement of liquids and subsequent contamination of surface water. (Section C. Water: Hydrology)

For Alternative C, it is likely that fill material would be placed in contact with bedrock areas which are relatively permeable. Therefore, there would be a high potential for contamination of groundwater aquifers.

Since the location of any landfill associated with Alternative D is unknown, the geological impact is also unknown.



ORREY & TORREY INC. environmental/urban planning and design	Geologic/Seismic Conditions	EXHIBIT 1

Mitigations

In Alternatives A, B, and some areas of C, soil discontinuities encountered during site preparation should be overexcavated and backfilled with clay soil.

For Alternative C, an impervious layer should be constructed over all areas of bedrock prior to fill operations in order to reduce potential ground water contamination. Perimeter levees should also be engineered to prevent surface runoff from entering Pacheco Creek channel.

2. Soils

Setting

The site area for Alternative A and B is underlain by weak, compressible, low permeability peat and silty clay marsh deposits known as Bay Mud. On-site boring logs indicate that the thickness ranges from 4 feet to 62 feet. Underlying the Bay Mud are stronger deposits of relatively incompressible silts and clays. Earth Appendix Table 1 presents typical engineering properties of Bay Mud. These properties will significantly influence and, in many cases, control the design and performance of overlying improvements.

Soil permeability tests conducted by Harding Lawson Associates in 1981 on samples from test borings on the west side of the Alternatives A and B area indicate a range in permeability of 10^{-4} cm/sec to 10^{-7} cm/sec in Bay Mud underlying that parcel.[4] These tests were performed in the laboratory on core samples and represent vertical permeability for discrete specimens. Gross vertical permeability of a multi-layered soil mass is controlled by the most impermeable soil strata within the mass. Gross horizontal permeabilty of a multi-layered soil mass is controlled by the most permeable soil strata and can be expected to be at least an order of magnitude faster than gross vertical permeability. High groundwater conditions on the parcel would tend to reject infiltration of precipitation and surface water runoff due to saturation of soil pores.

The 178-acre southern parcel of Alternative C is covered by stiff residual silts and clays in the upland areas and by alluvial deposits of medium to stiff clayey silt derived from adjacent hills in the lowland areas. The alluvial clayey silts are underlain in turn by soft compressible marsh deposits, Bay Mud, varying from 0 to at least 35 feet thick.

The U. S. Soil Conservation Service (SCS) Soil Survey of Contra Costa County shows that the soils underlying this area are of the Omni, Altamont and Lodo series[5]. The Omni soils occur in the low areas near Pacheco Creek. The Altamont and Lodo soils occur on the hill northeast of the ranch road and on Vine Hill, respectively.

The Omni silty clay is a poorly drained soil on slopes of 0 to 2 percent. The soil is formed on alluvium derived from sedimentary rock and is generally found

on the lower flood plains near Pacheco Creek. The soil is soft and weak, and highly compressible under loading.

The Altamont clay consists of well-drained soils underlain by shale and soft, fine-grained sandstone. The soil is found on slopes of 15 to 30 percent. Depth to bedrock is typically 3-1/2 to 5 feet.

The Lodo silty clay loam consists of excessively drained soils underlain by soft sandstone and shale. The soil is found on slopes of 9 to 50 percent. Depth to bedrock is generally 1 to 1-1/2 feet.

Collectively these soils are predominantly clays and have low permeabilities. Testing performed by Harding Lawson Associates indicates peremeabilities ranging from about 10^{-4} cm/sec to 10^{-7} cm/sec.[6,7] Although this is believed to be a reasonable value range for vertical permeability, horizontal permeability values may be higher. Shrink-swell potential of these soils is moderate to high.

Ponding conditions on the east lowland areas during rainy periods indicates poor percolation and poor surface drainage. Infiltration of rainwaters may be at a greater rate on the slopes and exposed rock surfaces of the central and western hilly areas. The depression created by the removal of borrow material for landfill cover in the northern part of this parcel allows direct infiltration of surface water into the groundwater system.

Impacts

In October 1978, part of the eastern boundary of the existing 125-acre landfill, which has been filled in some places to a height of 88 feet, had a slope failure. This slope failure displaced a Central Contra Costa Sanitary District 72-inch outfall sewer main approximately 40 feet laterally. The slope failure was caused by excessive pore pressure generation and overstressing of the soft marsh soils due to the rate of loading, height of fill, and slope angle. Fill slopes were subsequently flattened from 3:1 (horizontal:vertical) to approximately 6:1 to reduce the rate of loading and allow excess pore pressures to drain from the foundation soils. A similar event could occur with Alternatives A and B, and also Alternative C in the southern portion of Acme's property if the refuse fill is placed at rates, heights, and slope angles similar to that which caused the first slope failure. A similar slope failure, depending on location, could affect the CCCSD sewer line, transmission towers, levees, and bridges.

There is also a potential impact of generating a mud wave. This could occur if fill material placed on Bay Mud created a shear failure in which the soil mass moved in a fluid-like manner. Potential hazards to nearby levees, bridges and pipelines would result.

The methane gas recovery project which draws methane from the current 125-acre landfill would not be affected by landfill operations in Alternatives A, B, and C. On the existing 125-acre site, however, the decomposition of wastes

may lead to random volume reductions and differential settlements within the landfill. Open cracks resulting from such settlements could serve as conduits for infiltrating rainwater.

Although no methane recovery is planned at the present time for Alternatives A, B, and C, the contractual arrangements between Acme Landfill Corporation and Getty Synthetic Fuels, Inc. allow for methane recovery elsewhere on the property if future studies demonstrate the feasibility of continuing the project[9]. If methane recovery is extended to the site areas of Alternatives A, B, or C, the decomposition of wastes on those sites could also lead to the potential impacts as described for the 125-acre site.

Three bridges to span the CCCSD sewer line and approximately 20,000 feet of levees are included in Alternatives A and B. An undetermined number of levees would be required for the development of Alternative C. If founded directly on Bay Mud, these bridges and levees would be subjected to total and differential settlements that could affect their integrity and operation. Lateral soil pressures and settlements induced by filling operations may affect levee integrity and reduce freeboard.

In Alternatives A, B, and C, refuse placed over pipelines could cause settlement, heave, or lateral movement, that may damage the pipeline and connections. Fill placed near transmission towers could cause settlements which would impose downdrag* on pile foundations resulting in the foundation deflections or pile overstress.

Although the site areas in Alternatives A, B, and C are not subject to land subsidence due to hydrocompaction or peat oxidation, settlement could occur by consolidation of the soil when material is landfilled. Soil compression could present a potential hazard to pipelines, utilities, roads, and levees founded on compressible soils. Cracking of soil cover material may occur due to settlement. This can be mitigated by periodic regrading as needed.

Expansive soils in the site areas for Alternatives A, B, and C would affect pavements and light structures they support. Moisture variations in pavement subgrades can cause cracking and deterioration of the pavement. Foundations on expansive soil may experience volume change with moisture fluctuations causing cracked plaster and sticking doors and windows.

An on-site borrow area for cover material for Alternatives A, B, and C is located in the southern 178-acre area of Acme's property. (Exhibit C) Additional borrow areas for cover material may need to be located on-site or

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*downdrag, also referred to as "negative skin friction" is caused by the adhesion of settling soils to piles supporting a structure resulting in settlement of the structure and consequent damage.

off-site to supplement existing supplies. Cover material is needed for individual cell closure and for final closure for Alternatives A, B, and C.

The site areas for Alternatives A, B, and C are not subject to damage caused by dam failure. Failure of the Contra Costa Flood Control levee during periods of high water may present a potential flooding hazard for landfill operations.

Overtopping of the levees caused by reduced freeboard due to area settlements could also cause flooding.

Dredged materials placed over 110 acres of the lowlands in Alternative A might significantly impact the overall stability of landfill placed over the dredgings. A continuous layer of dredgings and, in particular, wet, loose dredgings underlying the landfill, may act as a plane of weakness and present an overall slope stability problem. Dredgings would also be highly compressible and would contribute to overall settlement of the landfill.

Dredgings would consist of combinations of silts and clays and, in general, when dried and compacted, should provide an acceptable landfill cover. High silt contents, however may increase the permeabilities above the 10^{-6} cm/sec requirements for cover.

Alternative D impacts would depend in part on the location and extent of landfill required for that alternative. The landfill requirements of this alternative are not known at this time.

Mitigations

Landfill side slopes between 4:1 and 6:1 should be used in lowland areas underlain by marsh deposits, i.e., Bay Mud, as in Alternatives A and B, to avoid slope failure and/or mud wave problems. These weak foundations soils should also be monitored by slope indicators, piezometers, and settlement platforms to verify predicted performance.

Existing slope indicators for monitoring soil movement are located near the CCCSD sewer line in the northeastern property. Additional slope indicators should be installed as filling progresses in the 200- and 100-acre Alternatives A and B areas.

In the Alternative C 178-acre site area, landfill side slopes of 3:1 would generally be considered acceptable in upland areas consisting of stiff silty clays underlain by claystone, siltstone, and silty sandstone bedrock. Monitoring of foundation soils by slope indicators and piezometers should not be necessary in upland areas.

For all three alternatives, however, fill heights, slope inclination, and rate of loading should be evaluated for overall and local stability by a geotechnical engineer.

On the existing 125-acre site where the methane recovery project has been initiated, waste cell cover should be visually monitored for cracking due to differential settlements. Open cracks should be sealed (regraded) as par of maintenance. Larger differential settlements may require landfill cover t be regraded to maintain design grades for runoff control. In Alternatives A, B, and C if methane recovery is subsequently included as part of site development, these mitigations should also be adopted.

Bridges constructed on Bay Mud should be supported on pile foundations driven to provide adequate bearing capacities including reserve capacities to overcome downdrag as designed by a geotechnical engineer. Levees should be keyed into subsoils a minimum of two feet and constructed to heights that will maintain required freeboard after expected settlements. Suitable setbacks of waste fills from levees should be determined by engineering analysis.

Setbacks in the lowlands or marsh areas have been necessary historically due to the weakness of foundation soils, i.e., Bay Mud. As the Bay Mud consolidates under fill loading, adjacent levees or underlying utilities founded on or in Bay Mud would experience vertical deflection. Based on previous site experience with the October 1978 slope failure and its impact on a CCCSD sewer line, setbacks of 40 to 50 feet from existing sewer lines and levees may be appropriate. Other setbacks for soil impact considerations include a 50-foot setback from existing levees and sewer lines recommended by Harding Lawson in the general Alternatives A and B area[10] and 75 feet from existing levees in the northeastern portion of the 178-acre Alternative C southern parcel.[11] Specific setback requirements of landfill from utilities, pipelines, and levees should be recommended by the project geotechnical engineer.

The potential hazard of compressible soils should be addressed during site development of Alternatives A, B, and C by test boring sampling and laboratory tests. Possible mitigations and setbacks of landfill away from sensitive areas have been discussed elsewhere. Design settlement predictions should be verified by fill and levee monitoring systems during and after construction. Settlement monitoring systems typically consist of plates embedded at the base of fills with a connected casing rising through the fill. However, since it is difficult to avoid damaging those plates during fill activities, the use of remotely sensed load monitoring devices should be considered.

Pavement design and construction recommendations should suggest methods to minimize the effect of expansive soil on pavements. Light structures should be supported on foundations independent of expansive soil such as drilled pier and grade beams systems. The effects of expansive soils on pavements may be minimized by:

> Compacting subgrade to moderate densities (90 percent relative compaction as determined by ASTM D1557) at a minimum of 5 percent over optimum moisture content, and

Treating the subgrade soils with lime to increase strength and to reduce volume change potential. Typical lime contents for this purpose vary from 3 to 5 percent of total treated soil volume.

The remaining available quantity of on-site cover material and the necessary quantities for future operation for Alternatives A, B, and C should be estimated. A suitable borrow area should be located to compensate for the difference. Cover material should be placed as recommended in reports by Harding Lawson Associates prepared for the existing operations site.[12,13,14] These recommendations generally require impermeable soil (clay) compacted near optimum moisture content at a minimum of 85 percent relative compaction as determined by ASTM D1557.

The potential for flooding caused by failure of the Contra Costa Flood Control levee should be considered during the design of the landfill area for Alternatives A, B, and C and adequate setback requirements should be recommended. Reports on original levee design and construction, prepared by the Corps of Engineers, as well as an evaluation of the current levee conditions, should be reviewed at that time.[15]

Dredgings should be completely dried and compacted before placing any overlying landfill in Alternative A. Successful drying of dredgings usually requires spreading to a thickness of 1 to 2 feet. Periodic disking or scarifying would help to expose as much surface area as possible to promote drying. Compaction would be difficult because of the weak underlying marsh deposits and would be accomplished best with light equipment working on 1- to 2- foot thicknesses.

The permeability of compacted dredgings should be verified by laboratory testing. If found acceptable by an engineering analysis, dried dredgings for cover should be treated in a manner similar to current cover material, i.e., moisture conditioned to a near optimum moisture content and compacted to a minimum of 85 percent relative compaction as determined by laboratory tests. ASTM D1557 provides suitable procedures.[16,17,18]

Recommended mitigations for Alternative D would depend on the impacts associated with whatever landfill is later found to be necessary for that alternative.

3. Seismicity

Setting

The Acme site is located in an historically active seismic area. The inferred Avon Segment of the Concord Fault crosses the eastern part of the Alternatives A and B site. (Exhibit I)

The Special Studies Zone Alquist-Priolo map series Port Chicago 7.5' quadrangle show the Concord Fault to be active. Geologic studies by Sharp indicate

tectonic creep is occurring along the Avon Segment. The evidence cited by Sharp, which was used in delineating the Special Studies zones, consists of offsets in bridges across Pacheco Creek; one on the Waterfront Road crossing, and one on the Atchison, Topeka, and Santa Fe Railway bridge (Exhibit I). An eastern strand of the Avon Segment of the Concord Fault is drawn in the vicinity of the Tosco Refinery east of the site. Both of these strands of the Avon Segment are believed capable of tectonic creep which has offset many man-made structures in the vicinity of Avon.[19]

The epicenter of an October 23, 1955 earthquake with a Richter magnitude of 5.4 has been placed along the trace of the Concord Fault about 4 miles south of the site. Other major San Francisco Bay Area faults which could generate ground shaking at the Acme site include the San Andreas, Hayward, Green Valley, Calaveras, and Antioch faults. Earth Appendix Table 2 presents estimated maximum seismic parameters for known faults in Contra Costa County.

The trace of the active Concord Fault-Avon Segment is located at least 2,000 feet east of the 178-acre Alternative C site.

Impacts

The presence of the Concord Fault-Avon Segment on the Alternatives A and B site provides the potential for ground shaking, surface rupture and, possibly, levee failures. Seismic parameters presented in Earth Appendix Table 2 are essentially the same for the 100-acre site. For Alternatives A and B, the possibility of surface ruptures should be considered in formulating plans for the disposal of Group 1 wastes. In addition, the possibility of tectonic creep suggested by Sharp should be considered. The effects of fault creep can be minimized by providing adequate thickness for containment cells. For Alternative C, the possibility of surface rupture or fault creep is less, because of the greater distance from the fault.

For Alternatives A, B, and C, seismic activity on the Concord or other major Bay Area faults could produce potentially damaging ground shaking at the site. Due to local soil conditions, an attenuation of the expected bedrock acceleration at the ground surface is possible. Damage could occur to landfill improvements such as bridges, levees, utilities, and landfill blankets or covers, primarily from slope failure or other ground shaking effects.

The Contra Costa County General Plan Seismic Safety Element has estimated peak bedrock accelerations of greater than 0.35 g (Earth Appendix Table 2)[20].

The Contra Costa County General Plan Seismic Safety Element indicates a high liquefaction potential in clay-free water saturated sand lenses within the marsh soils in this general area. Borings in the Alternatives A, B, and C areas by Harding Lawson Associates indicate an absence of continuous loose, water-saturated, clay-fee sand strata.[21] All boring logs to date indicate the site is underlain by a highly plastic gray silty clay with low to high organic content,

i.e., Bay Mud. Most borings in the Alternatives A and B site encountered a dense sand or stiff silt at depths of 80 to 100 feet. Borings in the 178-acre Alternative C site encountered firm soil at depths of 10 to 55 feet.

Impacts for Alternative D would depend on the location and extent of any landfill required for this alternative.

Mitigations

The Regional Water Ouality Control Board (RWQCB) has set Waste Discharge Orders that establish a 100-foot setback of landfill operations from the Concord Fault.[22] This setback requirement was intended to prevent leachate or Group 1 waste from escaping the landfill in the event of seismic activity along the fault. As a mitigation alternative, the risk of releasing hazardous wastes could be minimized by limiting the disposal of materials within the setback area to Group 2 and 3 wastes with low liquid content and by prohibiting Group 1 wastes. This mitigation alternative would require amending the RWQCB Waste Discharge Orders for Acme to allow the placement of only Group 2 and 3 wastes within the 200-foot (100 feet on either side of the fault line) setback zone.

The concern for closure and long-term integrity of containment structures should be addressed prior to the design and construction of landfill cells for Alternatives A and B.

In the event of an earthquake, which is felt at the site, Acme personnel should conduct a field inspection of levees, leachate drainage and control structures, and any significant structures, such as bridges or gas collection equipment. If any surface ruptures, cracks, soil bulges, or other unusual surface features are noted by Acme personnel, a detailed study by an Engineering Geologist should be conducted. Repairs to structures such as leachate control devices and levees should be made immediately.

Site-specific geologic data generated for design or during construction should be reviewed by an Engineering Geologist for possible evidence of faulting on the 178-acre Alternative C site.

For Alternatives A, B, and C, the risk of seismically induced failure of levee and fill slopes should be reduced by design and construction details which take into account the potential ground motion parameters such as peak bedrock acceleration, duration and natural frequency of shaking, region attenuation factors, and local amplification/attenuation due to site-specific geologic and soils conditions. A careful comparison of the expected fill areas and the active fault trace should precede the design of the landfill for Alternatives A and B.

Based on existing site-specific data, mitigations measures for liquefaction impacts would not be required. Any new on-site borings should be carefully logged to check for the presence of clay-free sand lenses. If any sand lenses are encountered, standard penetration tests should be performed for liquefaction evaluation.

Footnotes

[1]Norris & Webb. Geology of California, 1976, p. 365.

[2]Harding Lawson & Associates, Field Exploration & Laboratory Testing, Northeast Parcel, Acme Landfill, Martinez, California, 1981.

[3]Harding Lawson & Associates, Report on Disposal Site Operation Acme Landfill, Martinez, California, 1978.

[4]Harding Lawson, Field Exploration & Laboratory Testing.

[5]U.S. Department of Agriculture, Soil Survey of Contra Costa County, California, 1977.

[6]Harding Lawson & Associates, Phased Landfill Development Plan, North Part of Southern Parcel, Acme Landfill, Martinez, California, 1981.

[7]Harding Lawson Associates, Report on Disposal Site Operation Acme Landfill, Martinez, California, 1978.

[8]California Administrative Code, Tide 23, Chapter 3, Subchapter 15, Sections 2510 and 2511.

[9]Harding Lawson Associates, Frank Boerger, P.E., Civil Engineer, Telephone Conversation.

[10]Harding Lawson Associates, Report on Disposal Site Operation.

[11]Harding Lawson Associates, Phased Landfill Development Plan.

[12]Harding Lawson Associates, Field Exploration and Laboratory Testing.

[13]Harding Lawson Associates, Phased Landfill Development Plan.

[14]Harding Lawson Associates, Report on Disposal Site Operation.

[15]U.S. Army Corps of Engineers, Sacramento District, Design Memorandum #2, Walnut Creek Project, 1964.

[16]Harding Lawson Associates, Field Exploration and Laboratory Testing.

[17]Harding Lawson Associates, Phased Landfill Development Plan.

[18]Harding Lawson Associates, Report on Disposal Site Operation.

[19]Sharp, R.V., Map Showing Recent Tectonic Movement of the Concord Fault, Contra Costa & Solano Counties, California, U.S.G.S. MG-505, 1973.

[20]Contra Costa County, General Plan, Seismic Safety Element, 1975.

[21]Harding Lawson Associates Field Exploration & Laboratory Testing.

[22]California Regional Water Quality Control Board, San Francisco Bay Region, Order 76-37, Waste Discharge Requirements for Acme Fill Corporation.

C. WATER: SURFACE WATER, GROUNDWATER, EROSION

1. Surface Water

Setting

Nearby Water Bodies - The 200-acre parcel of proposed continued landfill - Alternative A and B, is bordered on the northeast by the Pacheco Creek/Walnut Creek Flood Control Channel. Walnut Creek is the major contributor to flow in the channel. The gaging station on Walnut Creek at the city of Walnut Creek reports a mean daily flow of 28 cubic feet per second (cfs). This flow varies from an average of 2.1 cfs during September to 83 cfs during January[1]. The flood control channel empties into the Carquinez Strait - Suisun Bay area approximately 6000 feet from the northeastern corner of the Acme property. On the southeastern border is Pacheco Creek Channel, a 6000-foot-long dredged channel. The 200-acre parcel is crossed with a number of drainage ditches which flow to a tide gate at the levee. The tide gate is intended to allow water on the site to drain during low tide but to be sealed against incoming flow at the high tide. An Acme representative reports local fishermen have occasionally blocked the tide gate from closing at high tide, allowing tidal water to enter the drainage channels[2].

Alternative C, the southern 178-acre Acme parcel, is bordered on the east by the southern end of the Pacheco Creek Channel. On the west side of the parcel is the Contra Costa Canal. The canal, through a series of siphons, transfers water to the Martinez Reservoir about a mile to the west. These surface water features are shown on Exhibit J1.

Drainage Patterns - The Acme property is in an area that generally receives 15 inches of precipitation per year.[3] The USGS estimates that 0.5 to 1.0 inch of the precipitation could be expected to flow off the area as runoff if the land was in natural condition.[4] The path of this runoff and the general drainage patterns on the properties are shown on Exhibit J1.

Water Quality - The water quality control plan for the San Francisco Bay Basin identifies beneficial uses of waters in the area. The Walnut Creek has identified with it beneficial uses of warm water habitat, cold water habitat, and wildlife habitat. Potential beneficial uses include both contact and non-contact water-based recreation.

A Corps of Engineers' report (1974) on the area's water quality as part of the 1973 dredging operation characterized the Creek as having a high organic load concentration yet with a dissolved oxygen concentration near saturation. That is, even though the water had a great demand for oxygen this demand was easily met. Turbidity, the relative muddiness of the water, was found to be about 15 to 30 JTUs during outgoing tides. Incoming tides brought in

suspended sediment raising turbidity from 15 to 70 JTUs with 45 minutes. Heavy metal concentrations were very low. Visual water pollution was present in the form of high-water oil and grease line on the rooted water plants. Black deposits were visible at locations along the banks; slight agitation of these deposits turned the water black. Background pH levels were found rather high, but still within the 7.0 to 8.5 range desired by the RWQCB. More recent water quality observations were made of highly toxic leachate entering the Creek from drainage channels near the active landfill, as described later in the Impacts section.

Floodplain - On maps of flood-prone areas prepared by the U.S. Geological Survey in 1969, all areas of the Acme property except Vine Hill and the adjacent hills are shown as areas subject to occasional flooding.[5] More recent maps (1977) prepared by the Department of Housing and Urban Development show the current Acme landfill site outside the flood hazard boundary due to its elevation.[6] The Regional Water Quality Control Board (RWQCB), as part of Order No. 76-37, required Acme to protect the landfill site from inundation which could occur as a result of floods having a predicted frequency of once in 100 years.

Impacts

Implementation of Alternatives A and B may have an adverse impact on surface water quality in adjacent Pacheco Creek and Pacheco/Walnut Creek Flood Control Channel. If leachate streams are produced, as they have been produced on occasion at the existing landfill, the leachate may lessen beneficial uses of such surface waters. Specific impacts of leachate in surface waters are described in Table 3. In addition, in Alternative B, the 100-acre environmental mitigation area near mean sea level and open to tidal action intermixed with a landfill increases the potential for surface water contamination. Alternative B would increase the number of sides of the landfill and each side would become a possible leachate stream source. The length of contact between containment levees and surface water would also be increased. Alternatives A and B both include separating the completed landfill operation from tidal water bodies by a levee, and, therefore, there is a higher probability of surface water quality impact. Alternative C may have a significant impact on the water quality in the Contra Costa Canal. If landfill operations are conducted near the open protions of the canal, dust and flying debris may land in the canal. Contaminated surface runoff from the landfill could reach the canal. The impact of Alternative D on surface water quality would depend in part on the location of a landfill to accommodate the remainder of solid waste not recycled and the residues from the waste-to-energy project.

Surface drainage patterns are important in determining the amount of infiltration and, therefore, leachate impact, at a landfill. If depressions are allowed in the landfill areas in Alternatives A, B, C, and D, so that some

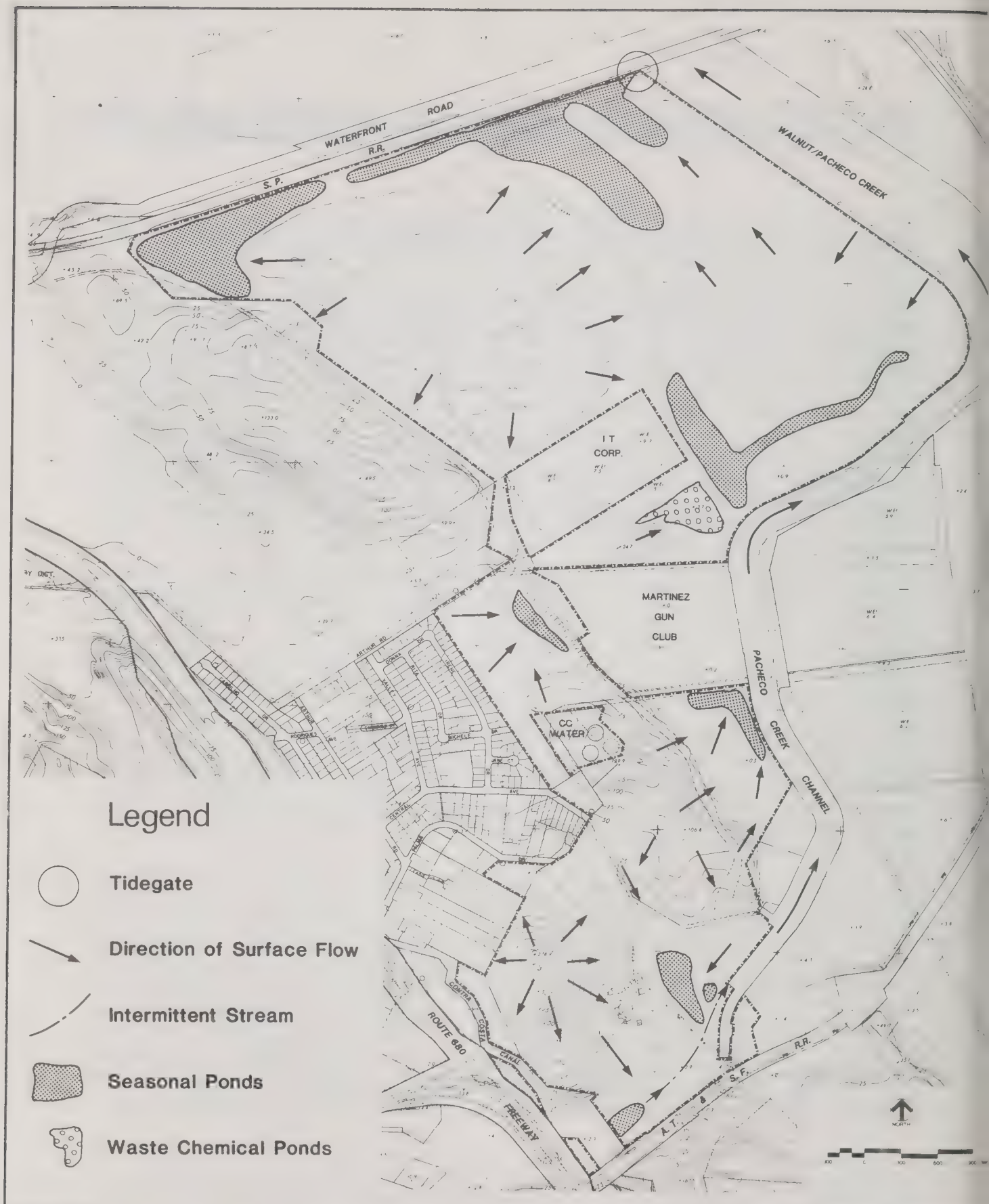
ponding is likely, infiltration would be increased in those areas. Such ponding creates additional problems: most notably odor and mosquitoes[8].

In October 1978, a portion of the existing landfill slid into the adjacent 200 acre parcel. (This is the slope failure noted in Section B., Earth: Geology, Soils, Seismicity.) Alternatives A and B may develop a significant adverse impact if a similar landslide occurs on the eastern border of the 200-acre site facing the flood control channels. In addition to the potential water quality impacts of refuse and debris in the channel, the slide may restrict the flow of flood waters. If a slide occurs during the rainy season, when the last slide occurred, flooding in the vicinity is possible. A landslide into Pacheco Creek may produce flooding into IT Corporation's nearby Class I waste ponds located immediately upstream of Alternatives A and B. Though a major landslide is unlikely, this could cause flooding which would allow toxic wastes to enter the channel and drain into the Bay.

Alternatives A, B, C, and to a lesser extent, D, would affect surface water quality adversely by the wash water from a truck wash area. At the current operation the truck wash area discharges wash water into a drainage ditch behind the existing offices. In addition, an oily substance (perhaps used crankcase oil from landfill equipment) has been dumped into the drainage ditch. Such practices could have an adverse impact in a continued operation.

Construction of flood control levees within a flood plain can both restrict flood flows and raise flood elevations. The levees would reduce the extent of available flood plain and restrict the flood waters to between the levees. Acme engineers should present to the responsible agencies information on the potential significance of any increase in flood elevation and indicate what areas would be subject to flooding.

Acme is requesting permission to deposit material dredged from the adjacent Pacheco Creek-Walnut Creek flood control channel. In 1973, the Army Corps of Engineers dredged a similar portion of the channel from Suisun Bay to just north of the AT&SF railroad bridge (approximately 2.5 miles) including the channel adjacent to the 200-acre site. Dredged material was deposited on the parcel just north of the Acme site. A second disposal site was between Pacheco and Walnut Creeks on land owned by IT Corporation. A series of cells were formed to allow material in sections of the disposal site to settle. Spillways transferred the transport water above the settled material back to the channel. In general, the areas used for deposition of dredged material performed satisfactorily in maintaining water quality standards set for its effluent.



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2T environmental/urban planning and design

Surface Hydrology

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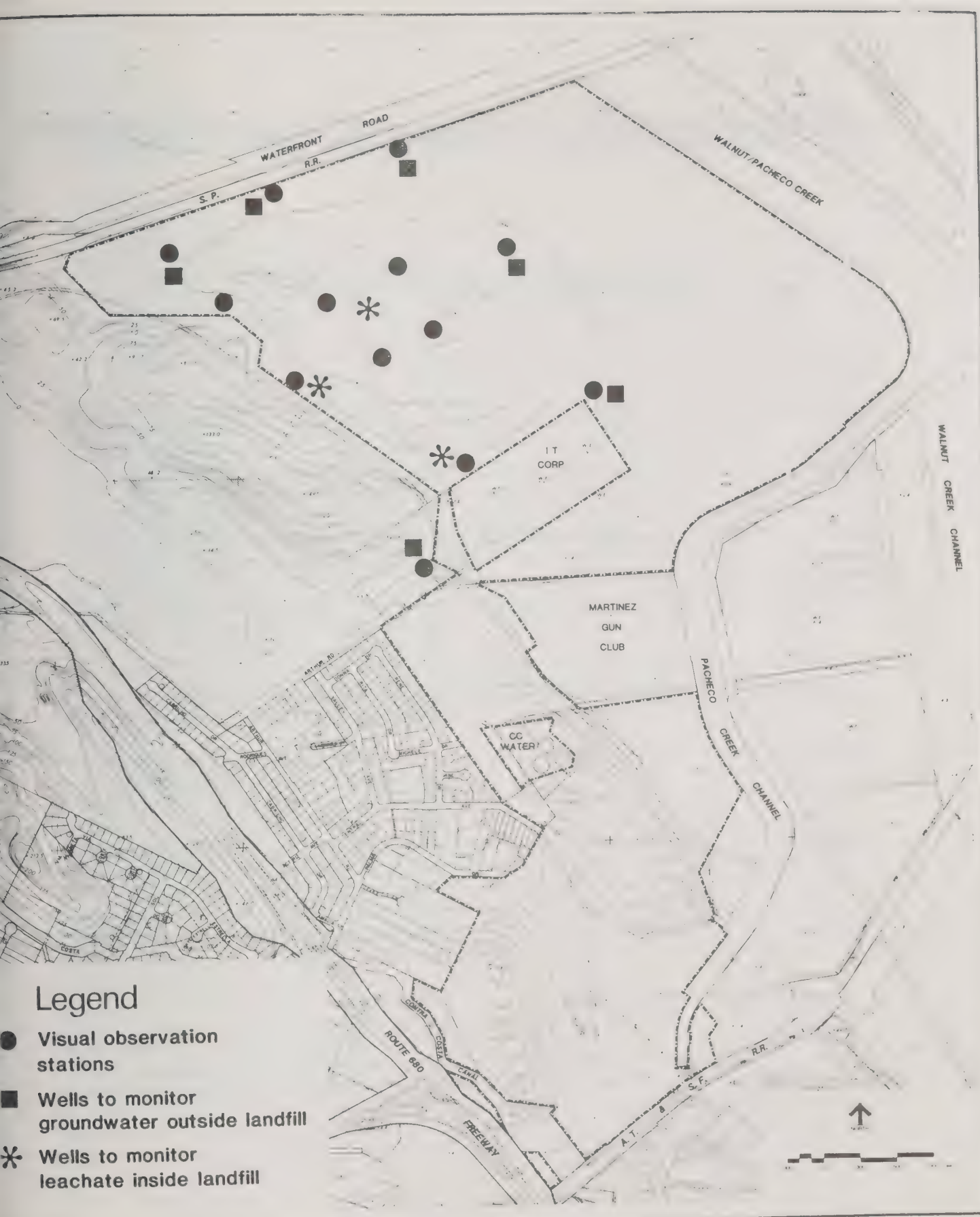


ORREY & TORREY INC. environmental/urban planning and design	Observation Points and Wells	EXHIBIT J 2

Table 3

Potential Leachate Problems in Surface Water[7]

Parameter	Impact	Associated Problems
BOD	oxygen depletion	septic conditions, discoloration, taste and odor problems
Iron	rust-colored stains	discoloration, slime growth on stream bottom, taste and odor problems
Decreased pH	increased toxicity	potential problems for domestic use, irrigation, and stock watering downstream
Increased pH	metal precipitation	blanketing of stream bottom, long-term toxicity
Metals	increased toxicity	potential problems for domestic use, irrigation, and stock watering problems
Organics	increased toxicity	potential problems for domestic use, irrigation, and stock watering downstream
Nitrogen	algal blooms	interference with domestic and recreational use
Phosphorus	algal blooms	interference with domestic and recreational use
Color	discoloration	reduced photosynthesis and oxygen depletion, aesthetically unpleasant

Mitigations

For Alternatives A, and B, Acme's engineers should evaluate the existing levees between surface water bodies and the proposed landfill expansion for use as a leachate barrier. Evidence of water quality protection (levee thickness, permeability, and linear extent) should be submitted to the appropriate agencies for approval prior to landfill operation. In addition, Alternative B requires a more complex drainage plan. The drainage should slope away from the low-lying mitigation areas toward containment areas. Barriers between the landfill and the mitigation areas should meet the same flood protection criteria as the levee between the landfill and the flood control channel. In Alternative C, the most effective mitigation measures would be for Acme to contribute funds toward the cost of enclosing the Contra Costa Canal through the area of potential impact. A less costly, though also less effective, measure would be the construction of a dust and debris barrier of both fencing and vegetation. In addition to the debris screens currently used at Acme, a windbreak screen of fast-growing tall vegetation should be constructed. (The Contra Costa Resource Conservation District can provide assistance in the selection and spacing of windbreak vegetation.)

To prevent surface runoff from reaching the canal, combination drainage berms and swales should be constructed upslope from the canal. These would be in addition to the drainage system constructed around the refuse disposal area.

A detailed surface drainage plan should be prepared for Alternatives A, B, C and whatever landfill is required for D by Acme or their engineers. The plans should locate drainage channels throughout the site to remove rainwater in a quick yet non-erosive manner. The plans should also indicate a method of containing and disposing of the collected rainwater. An evaporation pond located away from the refuse areas would be an alternative. A storage tank to hold the water for later use in dust control is another alternative method of disposal. It is important to prevent leachate streams or seeps from entering drainage channels. The surface drainage plan should be reviewed by Contra Costa County Flood Control and Water Conservation District and the Regional Water Quality Control Board.

Alternatives A, B, C and any required landfill for Alternative D should be operated with close review by consulting engineers and engineering geologists. Acme consultants should prepare detailed guidelines and operating procedures to reduce the landslide potential at the site perimeter for Alternatives A and B. Such procedures might include height restrictions at the perimeter, setbacks at the levee, increased compaction requirements, using only inert Class III material at the perimeter, instrumentation to monitor landfill movement, and a contingency plan for a landslide occurrence. (See Section B, Earth: Geology, Soils, Seismicity for more detailed description of potential landslide impacts.)

Truck wash water should be considered a potential pollutant. A method of preventing or controlling discharge from the wash area should be developed by Acme. Acme field personnel and mechanics should be trained in proper

methods of disposal of waste oil. Drainage ditches on the site should be restricted to disposal of accumulated precipitation. These mitigations apply to Alternatives A, B, C, and D.

2. Groundwater

Setting

Leachate is water that has travelled through the waste materials in a sanitary landfill and become contaminated with pollutants. The water may result from rainfall seeping into the ground or from groundwater flow already in the ground. Although leachate contaminants are commonly thought to be derived directly from such sources as residual pesticides in spray cans, residual chemical solvents in steel drums, herbicide residues on grass clippings, or organic wastes in disposable baby diapers, a significant portion of the contaminants come from the refuse itself. Apart from the obvious constituents (iron from rusting cans or organic materials from food and garden wastes), a considerable portion of the leachate strength may be attributable to the textiles, rubber, leather, wood, paper, and cardbord present in the refuse[9]. Leachate often contains high concentrations of organic matter and inorganic ions, including heavy metals. Several cases of pollution caused by leachates from solid waste disposal sites have been well documented, particularly the case compiled by the California Water Pollution Control Board (currently the State Water Resources Control Board)[10].

Rainfall either infiltrates the refuse or runs off as overland flow. In sanitary landfills such as Acme, the rate of infiltration is governed by the permeability and infiltration capacity of the soil used as cover for the refuse. In addition, the slope of the fill determines how quickly rainwater flows off the site while the number of level areas or depressions in the fill determines the amount of ponded water the site retains. Part of the water entering the refuse percolates downward to the soil zone and eventually to the water table. If the water table is below the refuse deposit, the percolating water travels vertically through the refuse to the water table. During this travel, the water leaches both organic and inorganic pollutants from the refuse[11].

Upon reaching the water table, the leachate becomes part of and moves with the groundwater flow system. As part of this flow system, the leachate may move laterally (sideways) in the direction of the ground water flow to a point of discharge at the land surface, as reported by the RWQCB in March 1979 (see Water Appendix). Surface flow could then enter nearby water bodies. If the water table is above the bottom layer of refuse, water may move horizontally through the refuse. This travel may increase the concentrations of pollutants in the leachate.

The proposed project area in general has a high water table. The soil is subject to occasional ponding with surface water running off slowly. Construction of drainage ditches and levees has tended to lower the water table to a depth of 30 to 40 inches. Some salinity in the groundwater limits plant growth.

As a condition of approval of the current Acme landfill operation, the San Francisco Bay Regional Water Quality Control Board (RWQCB) requires Acme to monitor the groundwater conditions at the landfill. Quarterly reports are submitted to the RWQCB with an annual report filed, at the end of each year. Acme has established six observation wells surrounding the landfill to monitor groundwater and three wells within the landfill to monitor leachate. (Exhibit J2).

During 1981, the observation well data indicated total organic carbon ranged from 6 to 230 mg/l, total Kjeldehl nitrogen ranged from less than 0.5 to 580 mg/l, and pH ranged from 6.2 to 7.3 among the different wells. A number of other water quality parameters are monitored by Acme and reported to the RWQCB.

Acme's self-monitoring reports are effective in identifying long-term trends in groundwater conditions. For 1981, as an example, the reports indicated the water quality parameters monitored had not changed significantly over the last year. There were some fluctuations observed, but there were no major trends higher or lower. A summary of recent self-monitoring reports is included in the Water Appendix.

Impacts

Since Alternatives A, B, and C are expected to involve the same type of solid waste as the current operation, a similar quality of leachate would be produced. Both the RWQCB and the Department of Fish and Game have indicated the current leachate to be highly toxic. The potential impact of such leachate on groundwaters is shown in Table 4.

The location of refuse in relation to the groundwater table is one of the most important factors affecting the quality of leachate from a solid waste landfill. The elevation of the water table for Alternatives A and B is at or near the surface. If the refuse is placed in the groundwater, highly potent leachate would be produced by infiltration and horizontal flow[12].

In addition to these groundwater impacts, Alternative B would increase the potential for groundwater pollution with the inclusion of the 100-acre on-site environmental mitigation area. Since the on-site mitigation areas would remain near sea level, the water table, with groundwater and leachate, would slope toward the mitigation area. There is a greater chance that this might happen with Alternative B than with Alternative A. Once pollutants reach these areas that are open to tidal flow, the pollutants may be discharged into Pacheco/Walnut Creek channel and Suisun Bay and adversely impact the water quality elsewhere.

Alternative C has the added potential for adversely affecting the Contra Costa Canal through groundwater. If refuse cells are constructed at elevations above the canal elevation, leachate or contaminated groundwater may flow

Table 4

Potential Leachate Problems in Groundwaters[13]

Parameter	Impact	Associated Problems
BOD	oxygen depletion	discoloration, taste and odor problems
Iron	rust-colored stains	staining of clothes and fixtures, taste and odor problems
Decreased pH	increased toxicity	potential problems for domestic use, irrigation, and stock watering downstream
Increased pH	metal precipitation	possible aquifer clogging
Metals	increased toxicity	potential problems for domestic use, irrigation, and stock watering downstream
Organics	increased toxicity	potential problems for domestic use, irrigation, and stock watering downstream
Fluoride	high fluoride levels	mottled teeth
Selenium	toxicity	possible toxicity to humans
Color	discoloration	aesthetically unpleasant

below ground toward the canal. Cracks or joints in the canal lining may allow pollutants to infiltrate the canal, and reduce water quality.

Alternative D would require further study to determine what areas would be used for a landfill and the composition in the waste that would be disposed

The self-monitoring program being conducted by Acme is effective in identifying long-term trends in the groundwater conditions surrounding the site. It does not appear responsive, however, to short-term leachate problems such as those which occurred during 1979. Leachate problems with the current operation at Acme have tended to be located at the perimeters. The location of leachate streams and seeps identified by the RWQCB in 1979 is indicated in an exhibit in the Water Appendix. Similar leachate problems could be expected at the perimeter of the Alternative A and Alternative B sites.

Leachate streams and seeps located during the inspections may continue to pollute the area until corrective measures are taken. Both the RWQCB and the Department of Fish and Game found the 1979 leachate streams to be highly toxic. Acme was unable to quickly contain and dispose of identified leachate seeps in the past. The same situation may occur with Alternatives A, B, and C.

In Alternative A, dredged material from Pacheco/Walnut Creek Flood Control Channel would be discharged as a slurry onto a designated 110-acre portion of the parcel. As the material settles, the transport water would be returned to the channel. Return water could spill or seep into the refuse areas or leachate could contaminate the return flow. Alternatives B, C, and D, would not have this potential impact.

Material dredged from the flood control channel in 1971 was found to have a high salinity content (3800 to 4800 parts per million)[14]. Use of such saline material for refuse cover in Alternative A may reduce the ability to provide a protective cover of vegetation. Alternatives B, C, and D, would not have this potential impact.

Mitigations

In order to reduce the possibility of escape of contaminants through the walls of the refuse cells, accurate profiles of permeability across existing levee system should be obtained through exploration and testing before any refuse cell is constructed. Details of blanket design and placement should be determined by the geological and soils engineering consultants. Existing perimeter levees may need to be rebuilt with a deeper core of impermeable material to block groundwater flow.

To lessen the impact of refuse placed into areas of potential groundwater in Alternatives A and B, the first layer of refuse could be restricted to primarily Group 3 materials such as inert construction debris. This would place the more potent leachate-forming materials above the water table. If leachate

passes through a layer of unsaturated soil between the refuse and the groundwater, the quality of the leachate is improved.[15]

In addition, the current RWQCB requirements of a natural clay layer at least 5 feet thick with a permeability of 1×10^{-6} cm/sec or less on the bottom and sides of all disposal areas should be implemented. The RWQCB requires such a low-permeability clay barrier be artifically constructed if such a natural condition does not exist. Such a barrier should be used if conditions warrant in Alternatives A, B, or C.

In addition to these groundwater mitigation measures, Alternative B should add more observation wells to monitor groundwater quality in each mitigation area. Increased attention to levee construction, such as a more stringent width or permeability requirement based on the consulting engineer's and responsible agency's analysis, should be required. Contingency plans to seal the mitigation areas from tidal exchange if they become contaminated with leachate should be required. If the source of contamination could not be eliminated or significantly reduced, an off-site mitigation area should be acquired to compensate for the loss of on-site area.

In Alternative C, groundwater observation wells should be installed by Acme at the property boundary near the Contra Costa Canal. Construction specifications for clay or impermeable liners for cells near the canal should reflect the increased concern for potential groundwater contamination. Set-backs should be used to keep the landfill operation at a safe distance from the canal. Subsurface drains should be installed if well observations indicate contamination near the canal. Linear drains (trenches lined with an engineering filter fabric and filled with gravel and a perforated pipe) would be an alternative to the subsurface drains.

Mitigations for Alternative D would depend on the location of the landfill and the composition of wastes being disposed.

The procedures for inspection of leachate seeps in the self-monitoring program should be revised after consultation with responsible agencies. Even though two categories exist in the current reporting program (leachate observed entering or leaving the site), the personnel making the site visits have overlooked leachage discharges. A perimeter inspection (on foot) may be necessary at each visit to allow a thorough assessment of leachate conditions. Acme should increase the training of field personnel in identification of leachate seeps. The revised self-monitoring inspection guidelines should be submitted to the responsible agencies for approval pior to implementation. These mitigation measures should be implemented for Alternatives A, B, C, and D to whatever extent a landfill is required.

If leachate streams are observed, Acme personnel should take immediate action to contain the toxic fluid. Acme should prepare a leachate containment program and describe measures it would take to quickly contain such discharges. The program should identify measures available to collect the fluid (diversion

ditches, berms, or trenches for example), measures to contain the fluid (excavated ponds or holding areas for example), and methods of disposal of the fluid (pumping to an approved storage pond on the property, pumping to tank trucks for shipment to a liquid waste disposal site, or spreading the liquid over the landfill for evaporation, as examples). The containment measures should be submitted to the responsible agencies for approval prior to implementation. Methods for securing compliance with these measures should be included in conditions for approval Alternatives A, B, and C and whatever landfill is required of Alternative D.

Leachate and groundwater monitoring after site closure is an important element of the long-term maintenance of the site. Acme should develop a groundwater monitoring element of the site closure plan. The plan should be submitted to responsible agencies for approval.

Detailed construction specifications for the containment system and spillways for the dredged material holding site, in Alternative A should indicate the ability to isolate the dredge water from leachate and groundwater at the landfill. The thickness and permeability of containment berms should be submitted to the responsible agencies for approval. No mitigations are required for Alternatives B, C, or D.

In Alternative A, the dredged material, if found to be high in salt, should be mixed with cover material from the borrow area or used as core material for berms or levees on the site. A high salinity content would only be a problem for soil that is to be revegetated. Revegetation plans, both those used during active landfill operations to protect the site from winter rains and those prepared as part of the closure plans, should include plants (such as western wheat grass) that have a high salt tolerance. No mitigations required for Alternatives B, C and D.

3. Erosion

Setting

The perimeter of the current landfill site, following four months of above-average rainfall, has numerous areas of active surface erosion. Rills are especially noticeable along the border with the new access road. Surface runoff is being allowed to flow off the landfill directly into drainage channels. The banks of the channels are cut with small gullys one to two feet deep. Lack of vegetation over much of the area allows surface erosion to take place unhindered. Portions of the proposed on-site mitigation areas are highly susceptible to siltation.

The borrow area where soil is collected to provide the daily covering over the refuse is also actively eroding. No impact is associated with this operation, however, because the site drains into itself. Sediment eroded from the borrow pit slopes is collected at the bottom of the site for later use.

Impacts

Continuation of the landfill with Alternatives A and B site may produce the same amount and type of erosion that is occurring on the current operation. If the gullys penetrate the cover material, buried refuse may be exposed. Lack of surface vegetation to control erosion also increases the potential for dust generation during the dry season.

In addition, the increased length of levees and access roads needed in Alternative B to enclose the mitigation areas would increase the amount of erodible surfaces. While the impacts of sedimentation from the levees into the flood control channel would not be significant (the channel already transports a heavy sediment load), the impact of sedimentation on the on-site mitigation areas would be significant. Tidal exchange is important for the biology of the mitigation areas. (See Section D, Biota for a complete assessment). Sedimentation may raise the surface elevation of portions of the mitigation areas and reduce tidal access.

Because of the hilly topography and the excavation necessary before refuse disposal would begin, the potential volume of erosion and sedimentation area would be greatest for Alternative C on the southern property.

Potential impacts for Alternative D are unknown at this time.

Mitigations

An effective revegetation program should be developed, for Alternative A, B, and C. (The assistance of the Contra Costa Resource Conservation District is encouraged). Low-cost broadcast seeding should be done several times per month during the September through April rainy season over the newly covered cells. Effective vegetative cover can mitigate a number of problems such as reducing surface erosion, reducing water available for leachate formation, and reducing dust. Use of shrub seed (such as native Baccharis) would produce vegetation also capable of trapping blowing debris.

Structural measures should also be employed to reduce surface erosion. Instead of allowing the surface runoff to flow over the steep fill slopes, the top-of-slope berms should be maintained and the water should be diverted to a reinforced channel or pipe which would carry water down slopes in a non-erosive manner. This would also prevent the sediment accumulations in the drainage channels.

In addition, Alternative B should have an effective stand of vegetation established on all levees and slopes facing the mitigation areas. Slopes should be seeded with a hydraulic slurry of seed, fertilizer, fiber mulch, and plant-based adhesive (tackifier). Seeding should be done during the month of September to take advantage of early fall rains for germination and establishment. If levee construction is continued past September, levee slopes

should be protected from erosion immediately after construction by a straw mulch (3,000 pounds per acre or as specified by the project engineer), and anchored with jute netting, a plant-based adhesive or asphalt emulsion (rather than a polyvinyl acetate tackifier). The straw mulch would be applied in addition to the seed and fertilizer slurry.

In addition to the erosion and sedimentation mitigation measures identified for Alternatives A and B, the pre-disposal preparations for Alternative C should be conducted with a detailed erosion and sediment control plan. In addition to structural measures (such as silt fences, sediment basins, and diversion swales), the plan should specify revegetation methods and species. The control plan should be approved by the responsible agencies prior to grading operations.

Erosion mitigations for Alternative D would depend on the location and nature of the area selected. The general measures outlined above should be applied to any site selected.

Footnotes

[1]Jorgensen, L.N., et al. California Streamflow Characteristics. USGS Open-file report. 1971.

[2]Boerger, F. Harding-Lawson Associates. Site Visit and Meeting. February 18, 1982.

[3]Contra Costa Public Works Department. Mean seasonal isohyets compiled from precipitation records of 1879-1973. Drawing No. B-166. 1977.

[4]Rantz, S.E. Mean annual runoff in the San Francisco Bay region, 1931-1970. U.S. Geological Survey, 1974.

[5]U.S. Geological Survey, Map of Flood Prone Areas. Port Chicago quadrangle. 1969.

[6]Department of Housing and Urban Development. Flood Hazard Boundary Maps. Revised September 1977.

[7]Cameron, R.D. "The Effects of Solid Waste Landfill Leachates on Receiving Waters," Journal of the American Water Works Association 70(3):173-176. 1978.

[8]Loc cit.

[9]Loc cit.

[10]California Water Pollution Control Board. Effects of Refuse Dumps on Ground Water Quality. California Water Pollution Control Board Pub. 24. 107 p. 1961.

[11]Schneider, W. J. Hydrologic Implications of Solid Waste Disposal. U.S.G.S. Circular 601-F. 1970.

[12]Caffery, P., M. David, and R.K. Ham. "Evaluation of Environmental Impact of Landfills." Journal Environmental Engineering Division ASCE 110(1):55-69. 1979.

[13]Cameron, Op. Cit..

[14]Harding, Miller, Lawson & Associates. Laboratory Testing of Dredge Spoil, Pacheco Slough, Contra Costa County. Prepared for Contra Costa County Flood Control and Water Conservation District. July 1971.

[15]Loc cit.

D. BIOTA: VEGETATION AND WILDLIFE

1. Vegetation

Setting

The Acme property contains two primary vegetation groups: seasonal wetland and grassland areas. All the low-lying wetland areas probably supported salt water marsh vegetation in the mid-1800's.[1] Much of this vegetation was eliminated with construction of levees in the early 1900's. Early photographs (1930-1950) indicate that portions of the site were in agricultural production and that marsh vegetation had been removed. With discontinued agricultural use, some areas have re-established wetland species.

Habitat evaluations were completed in 1977 and in 1979 on the proposed 200-acre expansion area (Alternative A).[2,3] These evaluations identified and mapped wetland indicator plant species and assigned unit values to designated habitats. Three plant species, pickleweed (Salicornica virginica), brass buttons (Cotula coronopifolia) and salt grass (Distichlis spicata) identified as wetland indicators by the San Francisco District of the U.S. Army Corps of Engineers are still very much in evidence on portions of the 200 acres. Field surveys of the entire site in February and March 1982 by Torrey & Torrey Inc. determined the distribution of these species which is shown on Exhibit K as "wetland vegetation". Those areas which are seasonally flooded or contain predominantly grassland vegetation are also indicated.

The average elevation of the proposed 200-acre expansion area is about one foot above mean lower low water (MLLW). All of this 200 acres is below the tidal line of mean higher high water (MHHW), but levees built by the Corps of Engineers in the 1960's and fill material beneath Waterfront Road and the Southern Pacific Railroad tracks now exclude tidal flows. Ponded surface runoff drains from the site into Walnut/Pacheco Creek channel via a ditch and flapgate at the northeast corner of the property (during low tides). In 1958, flooding at the chemical waste disposal ponds (west of the 200-acre area) broke retaining levees and inundated portions of this area.

The seasonally flooded area in the northwest corner of the property was completely flooded during field inspections of 1982. Previous field investigations report some areas with complete cover of pickleweed, salt grass and fathen (Atriplex patula) and other areas with rabbitsfoot grass, alkali heath (Frankenia grandifolia) and brass buttons.[4,5]

The southern portion of the Acme property is primarily grassland on the higher elevations and degraded wetlands in low lying areas. A ranch is presently in operation and most of the wetland species in the low-lying areas are limited and in poor condition due to the grazing of cattle and buffalo. There are also some areas of seasonal flooding, ranch operations and access roads where the vegetation is highly disturbed.

No plant species federally or state listed as rare or endangered have been reported from the Acme site. One species, soft bird's-beak (Cordylanthus mollis ssp. mollis) has been reported in salt marshes in the region and is considered rare and endangered by the California Native Plant Society.[6] Flowering occurs between July and November which is when positive identification would be possible. At this time, it is not known if this species occurs on the site.

Impacts

Alternative A would completely eliminate the existing wetland vegetation on the 200-acre parcel. When the landfill in this area reaches capacity, it would initially be converted to an open grassland habitat. This is considered a significant decrease in habitat value by the U.S. Fish and Wildlife Service and the California Department of Fish and Game. Alternative A, therefore, includes an off-site mitigation area at a yet to be determined location to compensate for the loss of wetland habitat on the site. Acme Fill Corporation has signed a Memorandum of Understanding with the California Department of Fish and Game (September 10, 1980) which describes what parameters constitute adequate mitigation. These parameters include the following items:

1. One hundred sixty acres would be deeded to the California Department of Fish and Game

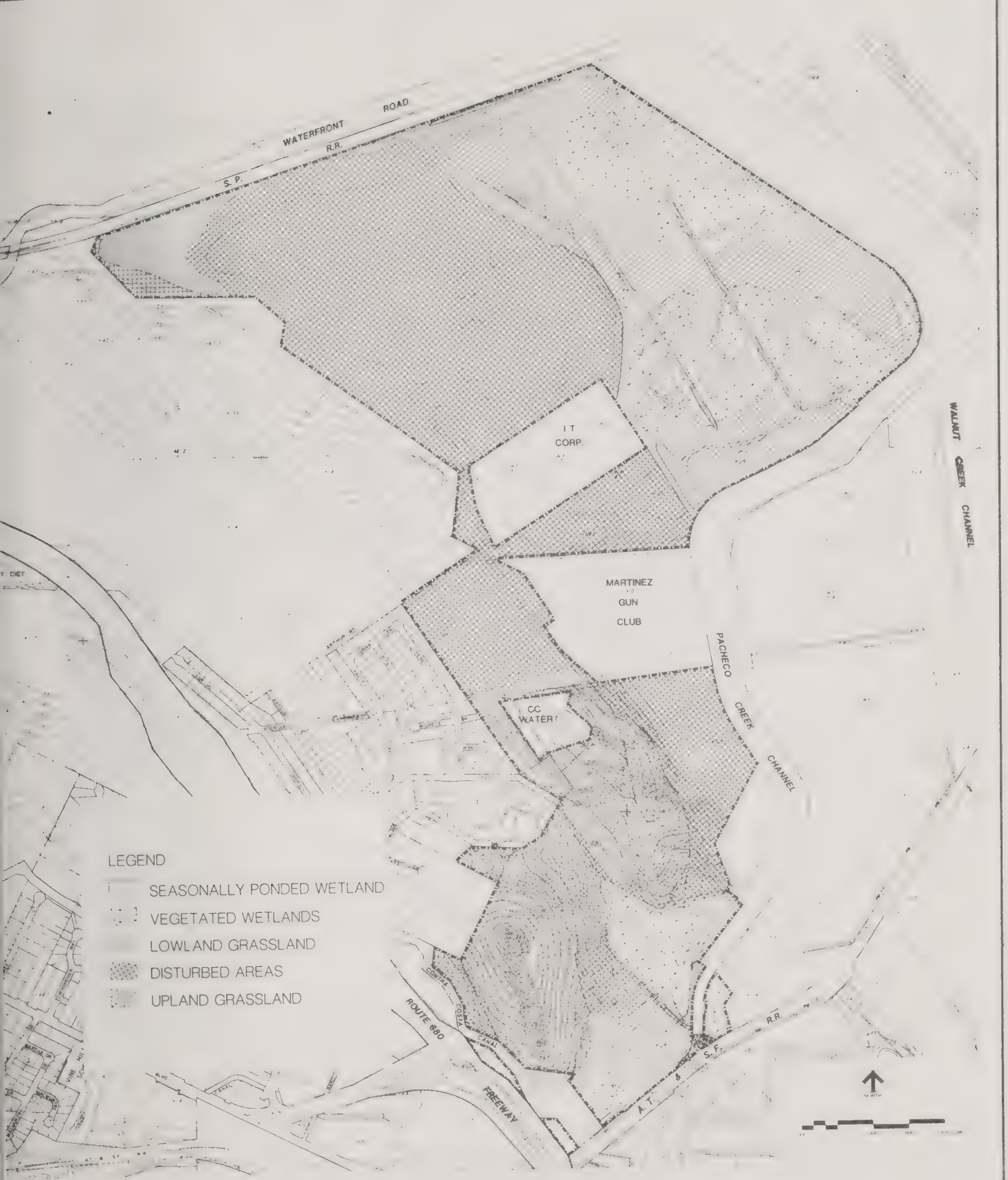
2. Mitigation lands would not currently be subject to tidal action but could be restored to wetland habitat

3. Restoration to wetland status may or may not be the responsibility of Acme depending on the management needs of the property

Several parcels in the Suisun Marsh have been identified in writing, and both parties have agreed that any one of these parcels would meet the compensation requirements. However, because no mitigation area has been secured by the applicant, the mitigation area could be located outside Suisun Marsh.

The U.S. Fish and Wildlife Service has stated that compensation would have to consist of purchasing 185 acres and managing it as seasonal or permanent wetlands depending upon the capability of the site selected. They state further that...

> "(c)ompensation can be achieved when an existing or anticipated adverse land use is halted or prevented or when existing habitat values are increased through modification or management. The mere transfer of land does not offset any loss unless the land will be improved over the "No Project" condition. Since the proposed compensation site is already protected (under the Suisun Marsh Protection Plan prepared under mandate of the Suisun Marsh Preservation Act of 1977; A.B. 1717), its purchase alone will not suffice. In addition, the proposed site is approximately 15 acres less than previously specified[7] as needed."[8]



source: Torrey & Torrey Inc.

RREY & TORREY INC. environmental/urban planning and design	VEGETATION AND HABITATS	EXHIBIT K

Since June 1977, the U.S. Fish and Wildlife Service has consistently recommended that suitable upland landfill alternatives be developed in lieu of filling wetlands at the Acme landfill site.

Alternative B would preserve about 100 acres of restorable diked wetland but would eliminate restoration potential on the remaining 100 acres due to the placement of fill material. Much of the 100 acres eliminated contains wetland species. However, the largest areas of wetland vegetation would be preserved in the protected 100 acres. If the preserved acreage were restored to tidal action and wetland vegetation became established over the entire area, the habitat value would be significantly increased. From a biological standpoint this alternative appears feasible. A complete habitat evaluation procedure would be necessary to determine if adequate compensation would be provided.

Alternative C would eliminate any restoration potential on the degraded wetlands of the southern 178-acre parcel. Because the suggested fill area in Alternative C does contain wetland species and has restoration potential, adequate compensation would be necessary for the loss of about 25 acres. In addition, there would be lost area for grazing animals during the landfill operation. Grazing potential may be returned or even increased after closure of the site.

The impacts of Alternative D on vegetation cannot be determined at this time because no specific site has been identified for the activities suggested in this alternative.

Mitigations

For Alternative A, the off-site mitigation area should be thoroughly evaluated by both the California Department of Fish and Game and the U.S. Fish and Wildlife Service to determine adequacy of the compensation. The habitat value of the off-site mitigation area selected should be increased to replace the habitat value of the area lost to landfill expansion by means of sound management practices.

In Alternative B, the preserved wetland area should be opened to tidal action and stream channels should be constructed to increase circulation, provide adequate flushing and encourage wetland vegetation. An impervious barrier should be placed between the preserved area and the landfill operations (above and below the ground surface) to prevent lateral movement of leachate into the wetland area. (Chapter III, Section B, Water)

For Alternative C, a mitigation area should be identified which would compensate for the reduced habitat value on about 25 acres. Compensation could occur if other portions of Acme property were opened to tidal action and habitat values were sufficiently increased. The feasibility of permitting grazing activites on the site after closure should be investigated.

2. Wildlife

Setting

The seasonal wetland and grassland areas on Acme property serve as valuable wildlife habitat. The Shell Oil Company marsh located west of the site supports a wide variety of water-associated birds, and many of these make use of the seasonal wetland areas on Acme property at various times of the year. The flooded areas are used frequently by large numbers of gulls which have gathered to feed at the landfill. The landfill also attracts large flocks of blackbirds and starlings. The California clapper rail, a state and federally listed endangered species, has been reported from tidal marshes in southern San Pablo and Suisun Bays. No recent reports have been made on its presence in the Shell Marsh or on the site. Generally, this species prefers areas of tall, dense, marsh vegetation. Such vegetation is not found on the Acme site.[9] A list of bird species observed in the Shell marsh and vicinity is included in the Biota Appendix because the majority of these would be expected to use the Acme wetlands.

Reptiles and mammals also depend on both the wetland and grassiand areas. Rodents, jackrabbit, striped skunk, raccoon, garter snake and oppossum have been reported on the site. Two species of special significance, the salt marsh harvest mouse and the ornate shrew were recorded from the Shell Marsh in the late 1950's.[10] The salt marsh harvest mouse is classified as an endangered species by both the U.S. Fish and Wildlife Service and the California Department of Fish and Game. This species is generally found in salt marsh habitat around San Francisco and San Pablo Bays where there is dense pickleweed mixed with saltbush and alkali heath submerged at the highest tides. The existing wetland areas of the Acme site would be marginal habitat for the salt marsh harvest mouse because of the limited distribution and low density of pickleweed.

The ornate shrew is not listed on either the federal or state endangered species list. However, it is considered to be locally endangered by the Contra Costa County Planning Department. Ornate shrews can be found in riparian zones, wet meadows, brush-coverd hills, and salt marshes, which are damp or moist throughout the year. Both the seasonal wetland and grassland areas of the Acme property would be considered suitable habitat. It is unknown if this species exists on the Acme site.

Most of the southern grassland area of the site is presently used for grazing livestock and buffalo. Consequently, native wildlife is limited.

Impacts

Alternative A would significantly reduce the seasonal wetlands which support the wildlife in the area. The result would probably be a reduction in local wildlife populations. The proposed off-site mitigation area would probably compensate for this reduction if it is managed to increase its habitat value, but

it would shift the wildlife to another area. Therefore, there would be no benefits for wildlife which currently use both the Shell Marsh and the Acme site. Although this is an adverse impact, it is not considered significant for bird species since migration throughout the delta region is possible. For reptiles, mammals, and other localized wildlife, this would be considered an unavoidable impact.

The large populations of gulls, blackbirds, and starlings which currently feed at the landfill would remain about the same for Alternatives A, B, and C since the existing operations would continue in the new areas.

In Alternative B, the preserved wetland habitat would encourage local wildlife populations especially if tidal action could be restored to the site. With proper management and restoration of the salt marsh habitat, this alternative would be the most beneficial alternative for local wildlife populations.

For Alternative C, the loss of the grazed wetlands would be a significant adverse impact because of the loss of potential for restoration to tidal salt marsh. However, the loss for existing wildlife is not as significant because of the degraded condition of the vegetation due to grazing activities.

The impacts of Alternative D on wildlife cannot be determined at this time because no specific site has been identified for the activities suggested in this alternative.

Mitigations

The mitigations recommended for impacts on vegetation apply to impacts on wildlife as well. Mitigations necessary to restore and protect vegetation would effectively compensate for impacts on wildlife. For Alternatives A, B, and C where salt marsh restoration is recommended, habitat management plans should be prepared to ensure that the necessary requirements for wildlife are provided.

Footnotes

[1]Nichols, D. R. and N. A. Wright, "Preliminary Map of Historic Margins of Marshland San Francisco Bay, California." USGS Basic Data Contribution No. 9, 1971.

[2]Madrone Associates, Wildlife Habitat Evaluation Acme Fill Contra Costa County California, 1977.

[3]Letter by McKevitt, J. J., Field Supervisor, U.S. Fish and Wildlife Service to Colonel J. M. Adsit, San Francisco District, Corps of Engineers, September 14, 1979.

[4]Madrone Associates.

[5]Contra Costa County. Draft EIR Industrial Access Road CP 79-70. January 1980.

[6]California Native Plant Society, Inventory of Rare and Endangered Vascular Plants of California, April 1980.

[7]J. J. McKevitt.

[8]Letter by Sweeney, W. W., Area Manager, U. S. Department of Interior to Colonel J. M. Adsit, San Francisco District, Corps of Engineers, November 12, 1980.

[9]Contra Costa County Planning Department. "Areas of Natural Significance to Unique Wildlife," Keynote Number 6, February 1978.

[10]Madrone Associates.

E. AIR QUALITY

Setting

The project site is located near the south shore of the Carquinez Straits, where climate and air quality are greatly influenced by winds blowing through the Straits. The prevailing wind direction is from the west, particularly in spring and summer. In winter, winds are more variable with periods of calm or light easterly winds, but west winds still predominate. Average wind speeds are relatively high, with windspeed highest in spring and summer and lowest in fall. At the Pittsburg Power Plant, located approximately 8 miles east of the project site, average windspeed is 10.1 mph. Calm conditions are rare, occurring about 1 percent of the time.[1]

The project site is within the Bay Area Air Quality Management District (BAAQMD). The District maintains air quality monitoring sites in nearby Concord. In 1980, the federal standard for ozone was exceeded on 3 days in Concord. Exceedances of the state and federal standards for total suspended particulates were also recorded on 8 and 2 days respectively. (Particulate samples are generally taken every sixth day. In 1980, particulate samples were taken on 49 days at Concord.) Measured levels of carbon monoxide, nitrogen dioxide and sulfur dioxide did not exceed state or federal standards in 1980.[2]

The BAAQMD also responds to citizen complaints and enforces the public nuisance portions of the state Health and Safety Code. The Acme operation has, in part, resulted in numerous citizen complaints about odors and the issuance of 3 separate Notices of Violation for odors. In the fall of 1978, 1980, and 1981 sufficient complaints were received by the BAAQMD to justify the issuance of a Notice of Violation. Two of these episodes were evidently associated with unusual conditions when previously covered refuse was exposed to the air and, at the same time, light easterly winds, typical of fall weather, prevailed. In 1980, BAAQMD Notice of Violations were also issued to Acme for hydrogen sulfide and a visible plume from a truck dumping fly ash. In all these cases, problems were rectified to the satisfaction of the District so that no further action was taken by the District.[3]

Impacts

Landfill operations affect local air quality through the generation of dust and odors. Regionally, landfills affect air quality through the generation of organic gases and vehicle emissions associated with collection and transport. Alternative disposal systems, such as incineration, also can generate air pollutants.

Dust Generation - Fugitive dust is generated at landfill operations by refuse vehicles and equipment used in moving, compacting, and covering the refuse. The potential for dust generation is greatest in summer, when winds are

strongest and soil moisture is lowest. Because the prevailing and strongest winds at the site are from the west, dust impacts would occur primarily to the east of the site.

Under normal conditions with prevailing westerly winds, dust would not have a significant impact. However, during periods of occasional calm or light easterly winds, Alternative C, due to the proximity of the landfill operation to the Vine Hill neighborhood, would affect those residences. Potential dust impacts are less for Alternatives A and B. For both Alternatives A and B the landfill operation would be located at the northeast corner of the site, further from the nearest residences. Alternative D, with the least amount of solid waste to be landfilled, would result in an even lower volume of refuse, with corresponding less need for vehicles and equipment that generate dust.

Odor Generation - Malordorous gases are produced by the decomposition of putrescible wastes, particularly those containing sulfides. Odor is also caused by leachate. Under normal wind conditions these odors would be diluted by the wind and carried to the east. During winter and fall, however, periods of calm or light easterly winds do occur. The potential for odor complaints is greatest at this time of year, because residences are located west of the Acme site.

Alternative C has the greatest potential for odor complaints, due to the landfill operations proximity to the Vine Hill residential neighborhood. Alternatives A and B would have a lesser potential for odor problems, as they would locate the landfill operation further from the Vine Hill residential neighborhood. Alternative D would involve a reduced volume of refuse and would be expected to have a proportionally smaller potential for odor problems.

Generation of Organic and Other Gases - Solid waste generates a variety of gases as materials decompose, and these gases eventually reach the atmosphere. The majority of the gas created is methane, carbon dioxide, hydrogen and nitrogen. None of these gases are considered to be air pollutants. Small amounts of argon, hydrogen sulfide, sulfides and hydrocarbons such as propane, ethane, and hexane are also produced.[4] With the exception of argon, these are all air pollutants. These gases are generated over a period of time and slowly leak into the atmosphere. The rate of gas production varies from landfill to landfill and is also dependent on temperature and moisture.

The rate of production of these gases is proportional, in part, to the composition of the waste and the rate it is put into the landfill. Emissions, therefore, would be similar for Alternatives A, B and C. Alternative D would involve a lesser input to the landfill and would have a proportionally lesser impact. The composition of waste in Alternative D would also involve a lower proportion of organics and a relatively high proportion of sterile ash so that the production rate and composition of Alternative D landfill gas could differ from Alternatives A, B, and C.

Emissions from landfill operations are currently not a major air pollution source in the Bay Area.[5] Emissions generated by Alternatives A, B, C and D would not have significant impact on regional air quality.

Vehicle Emissions - Vehicle emissions are related to the Vehicle Miles Traveled (VMT) associated with refuse disposal. VMT is the product of the number of daily trips and the average trip length.

The VMT associated with Alternative A, B, and C would be identical, as trip generation and average trip length would be identical. Alternative D would involve fewer trips due to a lower volume of refuse, so that total VMT for this alternative would be proportionally lower.

Other Emissions - Alternative D which includes the construction of a waste-to-energy project, could include a new stationary source of air pollution. Such a project would be a significant source of hydrocarbons, carbon monoxide, suspended particulates, nitrogen oxides, and sulfur dioxide. Such emissions would not be a result of Alternatives A, B, or C.

Mitigations

A dust control program should be developed to mitigate fugitive dust impacts from landfill operations. Wherever possible, on-site roads in Alternatives A, B, C, and D should be paved. Where paving is unfeasible, applications of water, calcium chloride, or waste oils to unpaved site roads would help suppress dust. The choice of material used would depend, in part, on relative humidity and road run-off conditions. Calcium chloride is useful when the relative humidity is over 30 percent and the substance is mixed with the top three inches of road surface. Waste oils, applied periodically, provide a packed oil soil crust with good resistance to water.[8] Consideration must, however, be given to road drainage conditions to avoid having oil run-off mix with surface and/or groundwater. Frequent application of water, as required, would probably be the simplest solution and have the least adverse environmental impacts.

The landfill operation itself should be sprinkled with water as necessary to control dust.

Planting grass or other vegetation on the finished fill is another method of suppressing or preventing dust. Such a program would be particularly important for Alternative A where dried dredged materials would be used as cover material. These materials contain a large fraction of silt which is easily blown by the wind.

For Alternatives A, B, C, and D, odor should be minimized by daily application of cover directly on the working face. Leachate odors should be controlled by implementing a leachate monitoring program. See Water Section.

The emission of organic gases from landfills is reduced by methane recovery, like the new system at Acme landfill. If practical, methane recovery should be implemented in Alternatives A, B, C, and D. Such recovery would occur in the future, as several years are needed to produce a sufficient concentration of methane to make extraction profitable.

Alternatives A, B, C, and D would require a BAAQMD Authority to Construct and Permit to Operate. Under the regulations for modified or new sources, the District can attach operational conditions to mitigate odor problems and complaints. At the time of application for the permit, the District would develop conditions of approval that would avoid the odor problems experienced with the existing Acme operation.[8]

A waste-to-energy project, as included in Alternative D, would require an Authority to Construct and Permit to Operate from the Bay Area Air Quality Management District. Current regulations require the use of Best Available Control Technology (BACT) to reduce emissions. Best Available Control Technology would probably consist of a stack scrubber, although the exact definition of BACT is determined during the permit process.

Footnotes

[1]California Department of Water Resources, Wind in California, Bulletin No. 185, January 1978.

[2]Bay Area Air Quality Management District, Air Currents, Vol. 23, No. 4, March 1981.

[3]Theresa Lee, Information Officer, Bay Area Air Quality Management District, telephone conversation 9 March 1982.

[4]F. B. DeWalle, et al., "Gas Production from Solid Waste in Landfills, Journal Environmental Engineering Division ASCE, 104:415 (June 1978).

[5]Leonard Clayton, Air Quality Engineer II, Bay Area Air Quality Management District, telephone conversation, 9 March 1982.

[6]Central Contra Costa Sanitary District, Predesign Engineering for Solid Waste to Energy Project, Draft Final Report, Prepared by Wegman/Carollo, Engineers, February 1982.

[7]State Solid Waste Management Board, Landfill Techniques Seminar Manual Presented by Emcon Associates. Co-Sponsored by the Governmental Refuse Collection and Disposal Association and the California Refuse Removal Council, Spring 1979, III-30.

[8]Leonard Clayton, BAAQMD, 9 March 1982.

F. CIRCULATION AND TRAFFIC

Setting

Acme Landfill lies between Waterfront Road on the north and Highway I-680 on the west. To the east, across the Walnut Creek/Pacheco Creek Flood Control Channel is Solano Way. The new Industrial Access Road leads directly from Waterfront Road to Acme Landfill.

Waterfront Road is a 2-lane facility east of the I-680 northbound on-off ramps and a 4-lane facility west of these intersections. The roadway needs repaving in many areas. Although no shoulders are available on the north side of the road, the south side of the road provides some areas that are suitable for vehicle parking. The Scenic Routes Element (1974) of the Contra Costa County General Plan lists 6.6 miles of Waterfront Road east of I-680 as a "scenic rural-recreation route."

To the west, Waterfront Road passes the entrance to a Shell Oil refinery as it continues to downtown Martinez. To the east, this route leads to several industrial facilities and the Port Chicago U.S. Naval Weapons Base. It also provides a connection to the Pittsburg-Antioch area. Most morning and evening peak hour traffic on Waterfront Road travels to or from the Shell Refinery to the west of the I-680 interchange.

The Waterfront Road/I-680 interchange is a partial cloverleaf with both north and southbound on-off ramps intersecting the south side of Waterfront Road. At the southbound on-off ramp intersection, the ramps are controlled by signals. Waterfront Road carries 2 lanes in each direction at this intersection with 1 of the 2 westbound lanes serving as an exclusive left-turn lane for vehicles turning to the southbound on-ramp. Waterfront Road is also controlled by signals at the northbound on-off ramp intersection. Waterfront Road carries only 1 through lane in each direction at this intersection, although a westbound left-turn lane is provided for vehicles turning to the northbound on-ramp. A second lane on the eastbound approach becomes an exclusive right-turn lane to this same northbound on-ramp. The northbound off-ramp approach to Waterfront Road has a very uneven pavement surface. Vehicles making a right turn to Waterfront Road experience a sharp drop halfway through the turn.

Waterfront Road is level at the Industrial Access Road intersection. East of this point, the grade rises as it becomes an overpass above the SPRR railroad tracks. A westbound left-turn lane and an eastbound righ-turn deceleration lane are provided on the Waterfront Road approaches to Industrial Access Road, the access to the Acme landfill. Waterfront Road joins the Port Chicago Highway through the Concord Naval Weapons Station about three miles east of the site.

Interstate 680 - is a 4-lane freeway leading to Benicia, Vallejo, and Sacramento via the Benicia-Martinez toll bridge. To the south, this freeway leads to

Concord, Pleasant Hill, Walnut Creek, and Danville. It also connects with Highway 4 to Antioch and Pittsburg via a major cloverleaf interchange approximately 3 miles south of the Waterfront Road interchange. To the west, via Highway 24, I-680 connects to Lafayette and Orinda, and all other major cities in the San Francisco Bay Area.

Industrial Access Road - is a 2-lane, paved road which replaces the landfill access formerly provided by Arthur Road through the Vine Hill neighborhood. Arthur Road is now permanently closed at its eastern end to all traffic including Acme, IT, and Martinez Gun Club traffic. Construction of the Industrial Access Road was funded by Acme Fill Corporation and IT Corporation, another disposal facility which maintains a Class I site next to Acme, and by a Community Development Block Grant. Land for the road was donated by Shell Oil Company which owns land adjacent to Acme's northwest property. The Industrial Access Road was dedicated February 17, 1982.

The Contra Costa County General Plan Circulation Element proposes a future extension of the Industrial Access Road, through the southern portion of the Acme property, to the Central Sanitation District property. This extension would connect with a frontage road along Highway 4 at the southern end of the Central Sanitary District property. The frontage road would intersect Solano Way on the east and Pacheco Boulevard west of I-680.

Solano Way - is a 2-lane well-paved north-south roadway serving several industrial facilities between Waterfront Road and Highway 4. Solano Way is parallel to and easterly of I-680. Solano Way has an interchange at Highway 4. Volumes are light on Solanto Way with speeds ranging from 35 to 45 mph.

Highway 4 - is a 4- to 6-lane east-west freeway through the Concord and Martinez area.

Existing a.m. peak, p.m. peak, and midday traffic volumes on the roadways near the Acme Landfill are shown on Exhibit L. Existing levels of service at the I-680 interchange on-off ramp intersections with Waterfront Road are shown in Table 6. "Service Level" is a scale referring to the east or difficulty for vehicles to travel through an intersection. The scale ranges from level A to level F. Service Level A indicates the best conditions with the least amount of delay while service level F indicates complete intersection congestion with significant delays. Service level D is the lowest level that is normally tolerated by jurisdictions during peak hour traffic conditions. The Circulation and Traffic Appendix contains definitions of level of service and capacity index which is a more sensitive measure of capacity than level of service.

In general, with one exception, both the north and southbound on-off ramp I-680 intersections with Waterfront Road are now operating at service level A conditions during all peak traffic hours including traffic going to and from Industrial Access Road. During the a.m. peak traffic hour, however, the southbound on-off ramp intersection is operating at service level D. This

would be the case even without landfill traffic. (It has been assumed in this analysis that each truck to or from Acme Landfill would have the same impact as 2.5 cars on intersection capacity.)

Weekday peak hour field counts in February 1982 at the new Industrial Access Road/Waterfront Road intersection show that approximately 80 to 85 percent of the vehicles travel to and from the west on Waterfront toward the I-680 interchange while the remaining 15 to 20 percent travel to and from the east. Approximately 30 percent of the vehicles are 2-axle or larger collection trucks including approximately 7 percent liquid waste disposal trucks. The average for 1981 was 36 percent trucks and 64 percent other vehicles going to Acme.[1] The Industrial Access Road EIR showed that, for a typical summer week, more vehicles traveled to the landfill on a Saturday than on a weekday (917 versus 800).[2] Other peak traffic volumes, however, are much lower on Saturday.

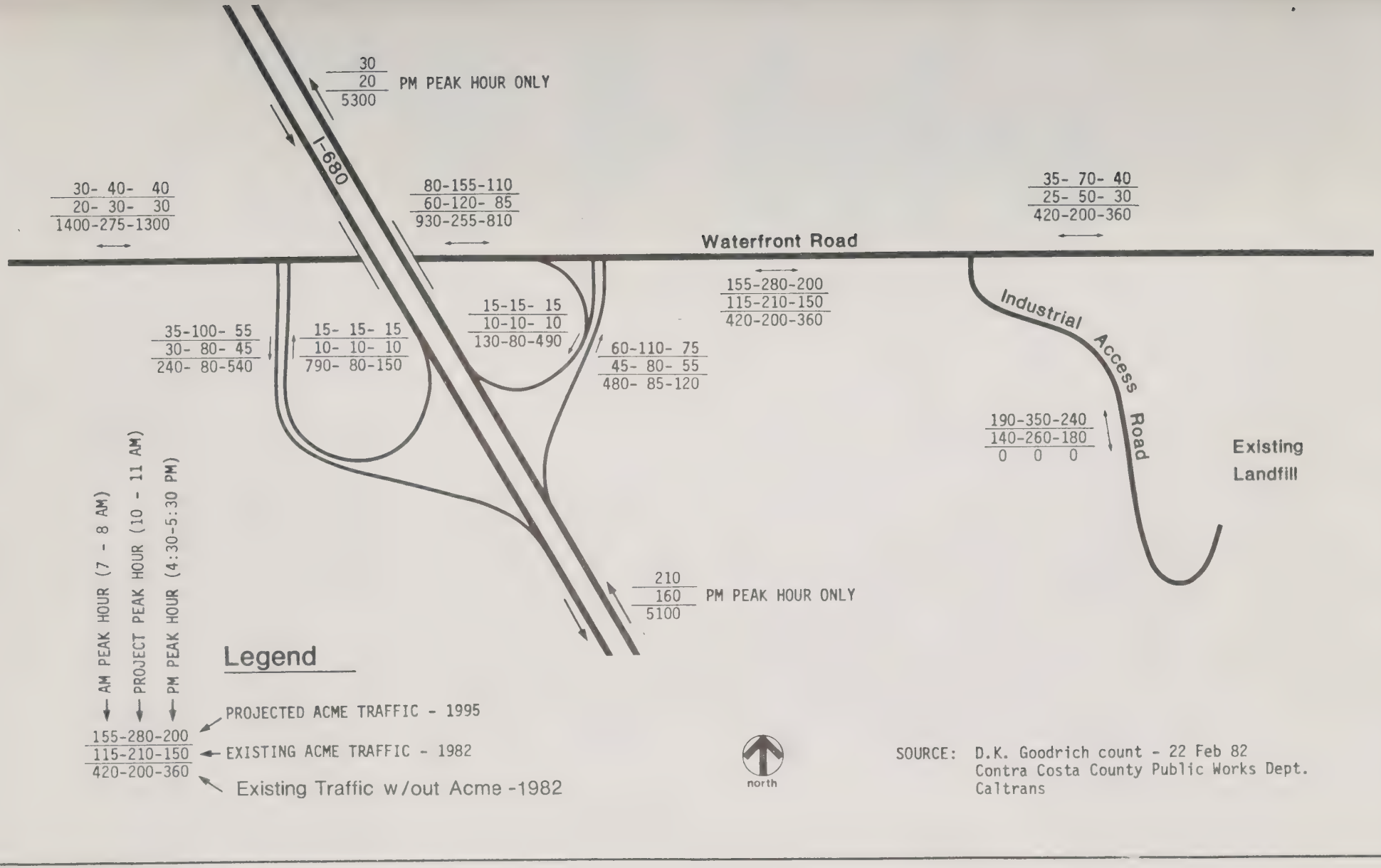
Impacts

The following impacts apply to Alternatives A, B, and C. Although the volume of traffic associated with Alternative D is not known, it is assumed that this volume would be less than that associated with the other alternatives, and, therefore the impacts of Alternative D would be the same as the impacts discussed below except that they would be proportionately less.

A 33 percent growth over existing daily traffic within the County would occur by 1994 based on population projections.[3] These increased volumes are reflected in Table 5, which provides capacity indices and level of service for affected intersections. During morning and evening peak commute traffic, the increased number of vehicles entering and leaving the landfill would have a minimal impact on intersection level of service (a maximum 2-point increase in capacity index) and would cause no change in the level of service designation. During the midday peak hour of traffic to the landfill, capacity index would be increased by 5 points at each on-off ramp intersection. No change would occur in Service Level designation and a good Level of Service A operation would be maintained.

The uneven and poor quality pavement on the northbound I-680 off-ramp approach and the sharp dip halfway through the turn could cause a safety problem and potential spill hazard for heavily loaded vehicles making the right turn toward Industrial Access Road and Acme Fill.

Portions of the new Industrial Access Road surface have not yet been paved. Because the northerly portion of the road was built on bay mud, only a baserock surfacing was provided in the initial phase of the project. The use of wick drains will consolidate the underlying subgrade within a short period of time, providing a suitable surface capable of supporting conventional pavement section without the normal frequent failure and displacement as seen on Waterfront Road. Should these improvements not be made, continued use of



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Existing and Projected Hourly Traffic

EXHIBIT
L

Table 5

Capacity Analysis

CONDITION	WATERFRONT ROAD/I-680 INTERSECTION			
	NORTHBOUND ON/OFF RAMP		SOUTHBOUND ON/OFF RAMP	
	CI[1]	LOS[2]	CI[1]	LOS[2]
A.M. PEAK HOUR				
Without Project	52	A	94	D
With Project-Existing	57	A	95	D
With Project-Maximum Use-1995	59	A	96	D
PROJECT PEAK HOUR				
Without Project	11	A	13	A
With Project-Existing	22	A	23	A
With Project-Maximum Use-1995	27	A	27	A
P.M. PEAK HOUR				
Without Project	30	A	53	A
With Project-Existing	36	A	60	A
With Project-Maximum Use-1995	38	A	62	A

[1]CI = Capacity Index

[2]LOS = Level of Service

Source: D. K. Goodrich. The intersection capacity analysis in this Table is based on Transportation Research Board Circular 212, 1980, the currently recognized standard for all signalized intersection capacity analysis. This standard, based on the sum of critical conflicting turn volumes, takes into account intersection approaches with light as well as heavy volumes by assuming optimum signalization is working for each approach.

Individual approach capacity analysis, popular in the 1960's and early 70's, was not employed because it does not provide clear information on the impacts of intersection improvements on the overall circulation system (i.e. more improvements than are necessary to make an intersection operate acceptably may be recommended based on individual approach analysis).

this road with Alternatives A, B, C and D would result in further deterioration and increased potential for an accident or spill of hazardous materials.

Waterfront Road west of Industrial Access Road and sections of the I-680 on-off ramps at Waterfront Road flood 5 to 8 days per year.[4] The flooding may last several hours to an entire day but trucks are often able to travel on the flooded roadways if the water is not too deep. Waterfront Road east of Industrial Access Road also floods during the year with about the same frequency. Sometimes sections of Waterfront Road, both east and west of Industrial Access Road, are flooded at the same time which may prevent access to the landfill.

If a new southern entrance to Acme were created by connecting the Highway 4 frontage road with an extension of the Industrial Access Road, diversion of traffic to this entrance could account for 60 - 70% of total daily traffic. Diverted traffic would have moderate impacts on the Solano Way interchange with Highway 4 because existing volumes through this interchange are light. (These volumes were observed during field studies by Goodrich Traffic Group.) Diverted dump traffic would have a major impact on the Pacheco Boulevard intersection with the frontage road, and the Pacheco Boulevard interchange with Highway 4. Signals, turn lanes and other widening would be needed along Pacheco Boulevard in the interchange area. The garbage trucks would also infringe on the edge of a residential area along the frontage road near Pacheco Boulevard.

Diversion of dump traffic to the south would improve traffic circulation along Waterfront Road from the I-680 interchange to the dump access road.

A study by TJKM[5] recently completed for the Navy, details the impacts of closing the Port Chicago Highway and the eastern section of Waterfront Road east of Solano Way. At this time, the Navy has made no final decision about the issue.[6] The TJKM report estimated that closing Waterfront Road would cause re-routing approximately 1050 vehicles daily. Some of these vehicles would be diverted to Solano Way while others would remain on Highway 4 and/or I-680. No negative impacts are now estimated on peak hour traffic conditions along Waterfront Road near I-680 and Industrial Access Road. In fact, volumes would even decrease slightly. Distribution of traffic to and from the landfill along Waterfront Road near I-680 is estimated to remain essentially the same with or without closure of the Port Chicago Highway. Vehicles would continue to use Waterfront Road past the site to Solano Way which would be the chief alternate route to Highway 4, Concord, and points east.

Mitigations

For Alternatives A, B, C and D, the following mitigation measures apply:

The northbound I-680 off-ramp to Waterfront Road should be repaved, especially at the northbound right turn. This would require regrading as well to provide a more gradual transition between the pavement surface level of the

off-ramp and Waterfront Road. It is also suggested that a separate right-turn-only lane be built on the northbound off-ramp, at least 200 feet long.

When flooding occurs on Waterfront Road a number of alternative mitigations would be possible including placement of depth markers along Waterfront Road which would allow garbage truck drivers to perceive the depth of water to be crossed or approximate the time at which crossing would be possible, allowing the use of Arthur Road as a temporary measure until flood waters recede, permanently raising the roadbed between the freeway and the Industrial Access Road above flood level, and curtailing garbage hauling during flood periods.

The preferred mitigation alternative would be placement of water depth markers along Waterfront Road in those locations where flooding occurs. Placement of such markers has worked successfully at landfills and other industrial sites in Solano County. Signs should be placed along I-680 and Highway 4 to warn landfill traffic that access along Waterfront Road is blocked by flooding. These signs should be placed at least one exit in advance of Waterfront Road, or at Solano Way on Highway 4.

Footnotes

[1]Frank Boerger, P.E., Civil Engineer, Harding Lawson Associates.

[2]Contra Costa County, Draft EIR Industrial Access Road, January 1980.

[3]Contra Costa County, Solid Waste Management Plan, Draft 12/81, Revised 1/82.

[4]Contra Costa County Public Works Department

[5]TJKM, Traffic Analysis of Closure of Port Chicago Highway, September 1981.

[6]Louis Rivero, U. S. Navy, San Bruno.

G. NOISE

Setting

The primary source of ambient noise levels in the project area is traffic along Interstate Route 680 and Waterfront Road. The Noise Element (1975) of the Contra Costa County General Plan estimates that noise levels will exceed 60 dBA (CNEL) by 1990 within about 150 feet of Waterfront Road. The Noise Element establishes 60 dBA (CNEL) as the maximum acceptable outdoor noise level for residential land uses. Presently, there are no residences along this portion of Waterfront Road and lands on both sides of the road are planned for heavy industry. Measurements taken for the Industrial Access Road EIR showed that within 25 feet of Waterfront Road, on a weekday afternoon, noise levels ranged between 50 and 80 dBA.[1] Noise levels averaged 50 dBA when truck traffic was absent and noise peaks reached 80 dBA when trucks were present. After construction of the Industrial Access Road (recently opened) noise levels within 25 feet of Waterfront Road were expected to reach peaks of 80 to 85 dBA for increased periods of time during the day.

The most sensitive noise receptor in the project area is the Vine Hill residential neighborhood. Until recently all truck traffic from the Acme and IT Corporation disposal sites used Arthur Road through this neighborhood to access to and from Highway 680. Measurements taken for the Industrial Access EIR showed noise levels during peak traffic conditions reached 86 dBA (L_{10}); overall outdoor noise levels were estimated to be 83 dBA (CNEL). However, in January, 1982, Arthur Road was closed to disposal site traffic and noise levels are estimated to have dropped below the 60 dBA (CNEL) level.[2]

A lesser, intermittent source of ambient noise is the operation of collection vehicles and earth moving and compacting equipment on the landfill. According to equipment manufacturers, acceleration of vehicles and discharge of the load on the working face can generate peak noise levels ranging from 75 to 86 dBA at the area of operation. Presently, potential noise impacts from these sources on the Vine Hill Neighborhood are mitigated by the large hill on the southern parcel and by the distance of operations from the neighborhod (1500 - 2000 feet).

Impacts

The traffic analysis presented in Section III.F, shows that by 1995 (maximum site usage) Acme-related traffic for Alternatives A, B, C and D would increase existing traffic levels along Waterfront Road by less than 10 percent, except for the short stretch between Industrial Access Road and the easterly on-off ramp at the I-680 interchange (which would experience an increase of approximately 17 percent). About 36 percent of this increase would be truck traffic, based on the current composition of Acme-related traffic. The peak hour for project traffic would continue to be mid-morning (10 am to 11 am);

operating hours would generally continue to be from 7 am to 5 pm. (Some infrequent operations, such as a collector truck entering and exiting the site to drop off a load, could occur after 5 pm but before 10 pm.)

Based on these projections, noise levels along Waterfront Road would not increase significantly as a result of Alternatives A, B, C, and D, although the frequency and duration of daytime peak noise levels would increase slightly due to increased truck traffic. Community Noise Equivalent Levels (CNEL) would be expected to increase by less than 3 dBA along Waterfront Road by 1995 as a result of Acme-related traffic. The primary receptor of this increase would be wildlife which frequents the wetlands area north of Waterfront Road.

Acme does not expect to substantially increase the number or size of the bulldozers, compactors and other machinery now operating on the face of the landfill. Therefore, for Alternatives A, B, and D, noise from these sources, particularly as it might affect the East Vine Hill neighborhood, could not be expected to increase significantly, provided that the large hill in the south parcel remains. Alternative C could have a significant impact on the residential area because it would locate fill operations within about 500 feet of nearby residences and would not be entirely buffered by the hill.

Mitigations

For Alternatives A, B, and C the large hill in the southern parcel should be retained as a noise barrier for residents of the Vine Hill neighborhood. (Noise attenuation would require only that the present ridgeline remain and that excavation and fill operations remain on the easterly side of the hill. Continued excavation on that side of the hill would be permissible from a noise standpoint provided that machinery is operated below the ridgeline and care is taken to prevent sloughing of the ridgeline.)

If Alternative C is chosen, an acoustical study should be made to determine appropriate distances, operational procedures and possible noise barriers to protect residents of the Vine Hill area from excessive noise levels.

For all alternatives Acme should be required to properly maintain its equipment and use the best commercially available muffling devices on collection trucks and on-site machinery.

Footnotes

[1]Contra Costa County, Draft Environmental Impact Report, Industrial Access Road CP79-70, January 1980, p. 16.

[2]Ibid., p. 27.

H. PUBLIC HEALTH AND SAFETY

1. Landfill Gases

Setting

Landfill gases consist primarily of methane (CH_4) and carbon dioxide (CO_2) produced by biological decomposition of organic waste material. The concern for such gases arises from the potential explosion hazard of methane accumulation and the ability of carbon dioxide to affect the quality of a water supply. (Potential leachate impact discussed in Section C, Water: Surface Water, Groundwater, and Erosion.) The most dramatic charcteristic of methane is its potential for explosion if ignited in concentrations between 4 to 15 percent by volume in air. However, oxygen is not present in sufficient quantities in a landfill to cause explosions when methane concentrations reach this level. It is flammable at atmospheric pressure and ordinary temperature.[1] (The value of methane as energy is discussed in Section J, Energy.)

According to Acme representatives, methane has never been a problem at the site because operations are located in an open area, well away from development. In the past, methane has vented naturally on the 125-acre disposal area through permeable cover soils. When a piping system was recently installed to collect methane for the recovery project, the cover soil was "tightened" to restrict vertical escape.[2] Methane on this disposal area is now being drawn to a newly constructed processing plant located on the Acme property. The plant, located immediately southwest of the current entry gate, is owned and operated by Getty Synthetic Fuels, Inc. The plant processes and delivers methane to the Central Contra Costa County Sanitary District.

Lateral migration off the 125-acre site has been restricted by soil barriers compacted to 10^{-6} cm/sec or less permeability.[3,4]

Soil barriers are also being used to restrict lateral methane migration in the new 22-acre area opened for disposal operations in 1981.[5] Although Getty and Acme have an agreement which would allow continuation of methane recovery as landfill operations progress, further feasibility studies would be required to determine if such an operation should be initiated on the 22-acre area after methane has had time to develop. In the meantime, in accordance with the recommendations contained in the Harding Lawson Associates April 8, 1981 report, methane will vent naturally through the cover soil as it is produced.[6]

Impacts

Alternatives A, B, and C would all have approximately the same potential for producing methane in terms of the same geographical, geological, and climatic influences, as well as similar daily quantities of solid waste and proportion of organic material. The quantity of methane generated would vary, however, due to the different landfill capacity of each alternative. The material recovery

and waste-to-energy components of Alternative D would reduce the amount of solid waste to be landfilled daily and, thereby, require a correspondingly longer time for methane to develop in this Alternative than in Alternatives A, B, and C. Moreover, the large quantities of sterile ash produced in the waste-to-energy project in Alternative D would change the proportion of organic to inorganic composition of the solid waste and greatly reduce the potential for methane development.

Implementation of Alternatives A, B, C, and D in no way affect the generation of methane in either the 125- or 22-acre current disposal site operations.

Mitigations

For Alternative A, Acme is proposing to restrict lateral migration of methane by using approximately 20,000 linear feet of levees to form impermeable sides for disposal cells. These barriers would be constructed to meet at least the RWQCB minimum standards of 5-foot thickness with a permeability of 10^{-6} cm/sec.[10] Impermeable bay muds, between 40 to 60 feet thickness, would restrict downward vertical migration. Methane would be allowed to vent naturally through the top of the landfill through permeable cover soils.

In Alternative B, further on-site hydrogeologic studies should be conducted by Acme's engineers to determine if any additional lateral gas migration barriers would be required to prevent gas escape from disposal operations to on-site wildlife habitat mitigation areas.

For Alternative C, on-site hydrogeologic studies should be conducted by Acme to determine if subsoil conditions are adequate to prevent vertical escape or if additional measures such as synthetic liners would be required. Acme should also determine the hydrogeologic conditions of adjacent properties to determine the potential for lateral off-site gas migration, particularly to the west of the site toward the East Vine Hill neighborhood which is immediately adjacent to the property. If test results indicate the necessity for such measures, Acme should install appropriate barriers at the landfill perimeter and at the base of the fill in the construction phase.

For Alternative D, all of the hydrogeologic mitigations recommended for Alternatives A, B, and C, should be implemented to the extent that they are required.

To meet federal, state, and RWQCB standards and requirements[8,9,10] for methane control, monitoring probes should be installed as disposal operations are conducted. The number and location would be based on site-specific data concerning soils, groundwater, and surrounding land uses. Generally these probes are located between the landfill and the property line at a sufficient distance from the property line to allow a contingency plan to be implemented, if necessary.

If Acme's current plan to allow methane to vent naturally through permeable cover soils does not prove to be adequate, the gas should be vented by selective placement of other highly permeable materials, such as gravel to redirect the gas to a point of controlled release or, alternately, withdrawn with an exhaust blower system. In this system, vertical gravel-filled wells placed at intervals throughout the disposal site are connected by manifolding to an exhaust blower to create vacuum to draw gas from the field.

2. Fire Hazards

Setting

Since the adoption of Regulation 1 by the Bay Area Air Pollution Control District (now the Bay Area Air Quality Management District (BAAQMD)) March 10, 1957, open burning at landfills for general disposal purposes has been prohibited.[11] The Resource Conservation and Recovery Act of 1976, as amended[12], and the Clean Air Act of 1970, further restrict burning practices at landfills.[13] Despite these regulations and the site-specific prohibitions included as part of various Acme disposal operations permits,[14] fire remains a potential hazard in any landfill due to the possibility of spontaneous combustion within the fill, the potential of smoldering loads for igniting landfill operations, and the potential for fires caused by landfill equipment.

Acme's current landfill operations are located within the jurisdiction of the Contra Costa County Consolidated Fire District. Under the terms of the 1981 solid wastes facilities permit issued by the County Department of Health Services, Acme must comply with local fire district ordinances.

In the event of a fire, the District could respond with Engine 12 located at 1240 Shell Avenue, Martinez; Truck 14 located at 521 Jones Street in Martinez; Engine 9 at 209 Center Street in Pacheco. Battalion Chief 2 has authority in the area. Engines 12 and 9 both have additional reserves that can be called, if necessary.

Under the 1979 Uniform Fire Code, which has been adopted by the District, an owner or occupant of any property where a fire occurs must immediately notify the local fire agency.[15] Such a report must be made even if the fire has been brought under control. Standard procedures require the local fire agency to visit the site to inspect and confirm that the fire has been extinguished. The District reports that, in recent years, it has not had to respond to any fires on the Acme property.[16] In addition, under conditions of the permit from the County Department of Health Services, Acme is required to notify the Sheriff and County DHS of any fires as soon as possible. The Sheriff's office reports that it has not received any such reports.[17]

Fire-fighting apparatus available on the Acme property consists of an elevated water tank (±5000 gallons) located near the office and maintenance buildings, 2 water tank trucks (±1500 gallons each), a 1000-gallon mobile water tank equipped with pump, a water trailer (±1500 gallons) and a fire truck equipped with hoses, shovels, and portable extinguishers.[18]

In addition, two fire hdyrants nearby are supplied with water from an 8-inch main from the Contra Costa County Water District. One hydrant is located on Arthur road and the other, a new one, is located next to the new Getty methane recovery plant. Fire officials estimate that 1000-foot hoses can be attached to each hydrant. A third hydrant is being requested by the Fire District in the vicinity of the Waterfront Road/Industrial Access Road intersection. Soil stockpiled near the working face for daily cover is also available to use in smothering fires, if appropriate to the nature of the fire.

Impacts

Alternatives A, B, C, and D, to the extent that a landfill is involved, would all have minimal potential impact for fire hazard as the current operation with its recent record of fire prevention, since operations are expected to be conducted by the same operator and solid wastes are expected to be the same type.

Another potential fire hazard is created by landfill equipment. Investigation has revealed that most equipment fires are started by some kind of electrical malfunction which then spreads to oil, grease, and any refuse that collects on machines. Landfill compactors and dozers are vulnerable because they continually move over and through refuse.[19] Alternatives A, B, C, and D, to the extent that landfill is involved, would all have minimal potential impact for fire hazard from landfill equipment since the same equipment, or similar, that Acme is currently using would be used on another site. Acme has reported minimal fires.

Alternative D would have an increased fire hazard potential from the resource recovery processing facility and the waste-to-energy facility. Stored papers and oils would have fire hazard potential at a waste processing facility. A waste-to-energy facility would present fire hazards from stored waste and from the nature of the operation.

Mitigations

In accordance with the requirements of the Interim Status Document issued by the DOHS, Acme reports that it has prepared a Contingency Plan. This plan, currently in draft form, is to be prepared in final form when Acme receives further instructions and comments from the DOHS.[20] A Contingency Plan is designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or unsudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

Acme Landfill Corporation should continue to provide the fire-fighting equipment that is currently available for any continued operation and as specified by the Land Use Permit 615-60 issued December 2, 1965 by the County Board of Supervisors.

Other measures that should be incorportated by Acme, if not already a part of standard operating procedures, include the supervision of waste unloading to

separate smoldering loads and wastes with a high fire potential from the working face, the practice of extinguishing burning loads with soil or water before incorporating them into the fill, and providing fire breaks or firelanes, if appropriate.

In addition, Acme should also provide adequate access and turnarounds for professional fire-fighting equipment in the event the Consolidated Fire District is required to respond.

Frequent vehicle inspections, as often as biweekly, would help reduce electrical vehicle fires. Such inspections should focus on electrical shorts and hydraulic or fuel line leaks. Daily washings help to reduce equipment fires by washing away refuse collected in the machinery and loosen grease and oil.[21]

Automatic fire sensing and suppression systems should be installed on equipment to control fires once they have begun. Manual systems can be activated by the operator while using the equipment whereas the automatic fire-sensing system provides added protection when the vehicle is unattended. These systems should be inspected frequently to assure that they remain in good working order and that chemical tanks have a full charge. Such systems should be checked daily by operators by examining hoselines, nozzles, and the fastenings that secure the system to the vehicle.[22]

For Alternative D, special care should be taken at the waste processing facility to assure that materials are stored correctly with as little potential for fire as possible. Any conditions attached to the Land Use permit by the Consolidated Fire District should be implemented by the owner/operator of the facility.

3. Vectors

Setting

Vectors, as defined in the California Minimum Standards for Solid Waste Handling and Disposal are "...any insect or other arthropod, rodent, or other animal capable of transmitting the causative agents of human disease or disrupting the normal enjoyment of life by adversely affecting the public health and well being."[23] Pests or vectors frequently present at landfills include: flies and birds which can carry diseases such as bacillary dysentary or salmonellosis (food poisoning); mosquitos which may carry viral diseases such as encephalitis, malaria, and yellow fever; rodents which are carriers of enteric and other infections; and gulls and other flocking birds which may pose hazards to low-flying aircraft when disposal sites are located near airports. In addition, cockroaches, dogs, cats, and raccoons are considered potential problems.[24,25]

Two local agencies are responsible for vector inspection at the Acme Landfill: the County Department of Health Services, and the Contra Costa Mosquito Abatement District. In addition, the county airport, Buchanan Field, approximately 6500 feet south/southeast of Acme's southern parcel is particularly interested in the control of seagulls.

Before Acme's operation conformed to federally-mandated landfill standards, flies and rodents were observed frequently at the site.[26] Aerial surveillance showed that adequate daily cover was not being applied.[27] During the Open Dump Inventory/Landfill Compliance Program, the County Department of Health Services inspected the site on the average of 2 to 3 times a week for approximately 3 months between 1980 and 1981. Since then, the landfill has been upgraded and brought into compliance with RCRA standards. Proper daily cover has been applied consistently and the County Health Services Department has found virtually no flies, rodents, or miscellaneous pests on the 125- and 22-acre disposal sites.[28] Availability of cover material and cover requirements are specified in the December 1981 Solid Waste Facilities Permit. Before October 1 of each year cover material sufficient to cover at least 2 weeks of solid waste are to be stockpiled near the active wet weather disposal face. This stockpile is to be rebuilt as soon as weather permits. In addition, solid wastes are not to be exposed for longer than 24 hours.

On low-lying marsh areas elsewhere on and around Acme property, however, mosquitos normally appear for temporary periods when conditions are favorable. Such conditions require a combination of moisture and warm weather as in spring, when the weather is warm and ponded areas remain where water has not drained from or been absorbed into the ground. To control this problem, the Contra Costa Mosquito Abatement Control District inspects routinely and sprays as required.[29]

The normal mosquito problem was exacerbated in 1979 when a slope failure shifted the Central Sanitary District's 72-inch sewer main which extends through Acme's 200-acre northeast parcel. Subsequently, Acme unloaded and relocated previously disposed wastes from the area. These wastes, together with the odor of sewage, attracted mosquitos and required extra spraying for control.[30]

Although the immediate problem was controlled, drainage from the site has since been obstructed by an access road constructed to facilitate slope failure repairs. The road remains and continues to trap water in the northeast corner of the 125-acre site. Another drainage obstruction, unrelated to the landslide, is formed by levees in the northwest corner of Acme's property in the vicinity of the new Industrial Access Road and the hill on that portion of the property. This area is also designated as a wetland suggested for protection by the U. S. Fish and Wildlife Service. Both of these drainage obstructions create favorable mosquito-breeding conditions which require frequent inspection and spraying.[31]

Solid waste disposal facilities attract birds as they often provide feeding, watering, and roosting areas. An increase in bird populations near airports may increase the probability of bird hazards to aircraft.[32] According to reports from Buchanan Field, the facility has initiated seagull abatement control measures 30 times in the period between November 12, 1981 and March 29, 1982. The airport administration "assumes the birds come from Acme." Over the entire period a total of 9,080 seagulls have been estimated on the

airport runway. On the basis of the 30 times seagull abatement measures were put into effect, approximately 302 seagulls were estimated for each occasion. The number of seagulls at a given time is estimated to range from 50 to 2000.[33] Abatement measures are initiated with a seagull distress call tape to disperse gulls followed by a shotgun, which explodes fire cracker shells 100 yards in the air.

Buchanan Field, which accommodates turbojets and small light jets, maintains a bird hazard report file dating from 1973. The field also provides the Notice to Airmen, a continuous advisory bulletin available to all pilots who use the airport. The notice advises, "...during November to March from daybreak to 10 am, and after rains, large numbers of seagulls are on the runways."[32]

The issue of the degree to which Acme Landfill attracts gulls is complex and requires detailed study. Buchanan Field is listed by the State Solid Waste Management Board as one of the 5 airports in California as having a solid waste-related bird hazard.[35] A basic question is whether Acme is the sole cause or a contributory cause of gulls on the Field, or whether the bird hazard is due to other attractants such as the airport itself or other off-site features such as the nearby golf course.

Impacts

In terms of solid waste disposal, Alternatives A, B, and C all have essentially the same potential for adverse impacts from vectors. All would accommodate the same type of solid waste which would be disposed in the same manner and be subject to the same climate. The working face would be the same size so that harborage for vectors, other than mosquitos, would be approximately equal in these alternatives. Essentially the same kind of fencing would be used to enclose the site and to prevent access by domestic and wild animals. A major difference would be the acreage of ponded areas or marshlands which could attract mosquitos. The extent of these areas, which would vary in each alternative, has yet to be determined although Alternative B would perhaps have a greater potential for adverse impacts due to the on-site restored wetlands mitigation. Alternative D would probably have somewhat less of an adverse impact since less organic wastes would be landfilled while any landfill associated with this alternative would receive proportionately more inert, inorganic wastes.

The dredged materials area in Alternative A would add to the potential for attracting and breeding mosquitos. The extent of this impact would depend on several factors including the size of the area, the length of time the material remains in place, and the number of years the Acme property is used for spreading this material. Dredged materials have an approximate 85 percent water composition. As this material dries from the top, cracks form. These cracks, which tend to be very wide due to the consistency of the dredged soil, provide access to moist areas where mosquitoes breed beneath the dry surface.[36]

In Alternative D, if a processing center did not adequately store, process, and clean used food containers, an additional vector impact could occur there as well as at landfill. Vectors that could be particularly drawn to a processing center include rodents, flies, mosquitos, domestic animals and, depending on the location of the center, wild animals such as raccoons. The degree to which a waste-to-energy facility would attract vectors would depend on the storage facilities. Such a facility could also have a significant impact, particularly if wastes are stored routinely before being burned or if frequent repairs necessitate unscheduled waste storage.

Alternatives A and B are located beyond the FAA requirement for solid waste disposal facilities to be located beyond 10,000 feet from airport runways that accommodate turbojets.[37] Alternative C, however, is within 10,000 feet of the end of the Buchanan Field runway. In this respect, Alternative C appears to have a greater potential for adverse impacts than Alternatives A and B. It is unknown at this time what potential impact Alternative D would have in respect to seagulls.

Mitigations

Mitigations for Alternatives A, B, and C, and the landfill component of D, should consist of the same practices Acme now uses to prevent vectors - namely, compacting wastes and minimizing the availability of food and harborage by applying daily cover of 6 inches of soil. Daily cover means that solid wastes are not exposed for longer than 24 hours.

In addition, for Alternative D, storage bins at a processing center should have tight covers that can be locked or latched to prevent animals from foraging. For a waste-to-energy conversion facility, wastes should be stored so that they are inaccessible to vectors and the storage period should be minimal.

For Alternatives A, B, C, and D, additional mitigations, if necessary, should consist of trapping and screening, using attractants, and repellants, insecticides, rodenticides, and formulations such as solid and wet baits, fogs, mists, and residual sprays.

To reduce the breeding areas for mosquitos, in disposal areas, Acme should provide drainage wherever feasible in accordance with RWQCB regulations and waste discharge requirements. For Alternative B, restoration of the mitigation area to tidal action and excavation of channels to drain low spots would prevent mosquito breeding.

The potential for mosquito-breeding in the dredged materials drying area in Alternative A should be mitigated by spraying to control this problem when it occurs or by site engineering so that water within the drying area can drain from the site.[38] Acme reports that the site will be canted so that surface water will drain over a weir. To further speed the drying process, Acme plans to agitate or disk the topsoil.[39]

Further investigation is needed to determine what degree of bird hazard at Buchanan Field would be caused by Alternatives A, B, C, and D. Issues that should be addressed jointly by Acme and officials of Buchanan Field include:[40]

- establishing the flight patterns of the gulls to determine if the gulls that roost on the runway at Buchanan Field use Acme as a source of food.

- comparing the birds at the airport with birds elsewhere in areas surrounding the airport to determine if the birds are using another area as a base. All areas in the vicinity of the airport, as well as any airport features capable of attracting birds, should be identified including: crop land; water; vegetation; open areas such as fields, grasses, golf courses; animal feeding operations; and solid waste handling at the airport.

- determining the characteristics of bird populations at the airport including: whether the Acme operation is capable of supporting the number of birds found at Buchanan, whether the appearance of the gulls at the airport is related to seasonal patterns such as migration, and if the runway roosting pattern is related to inclement weather conditions when the birds are seeking shelter.

4. Site Security

Setting

A combination of barbed wire and cyclone fencing with locked gates is being used to restrict access to the existing Acme landfill operation. This system is intended to keep humans as well as domestic and wild animals from accidental contact with the waste disposal area. A 4-foot high, 4-strand barbed wire fence encloses the entire property. Additional precautions are provided around the 20-acre Class I site by a 6-foot high cyclone fence topped with barbed wire. A 6-foot high cyclone fence with wood slatting is also provided at the property perimeter in the area of the Vine Hill neighborhood.[41]

Access to the current disposal operations is controlled at the main entry gate. Between 7 am and 5 pm, when the site is open to the public, at least one Acme employee is stationed at this gate to monitor incoming loads. All gates are closed and locked at the close of each working day. After hours a Burns guard is posted at the site to provide security and to allow member collection firms access to the site. The entrance gate area is lighted.[42]

The Contra Costa County Sheriff has jurisdiction in the area. Little demand is placed on this function.[43]

Impacts

Alternatives A, B, and C would have virtually no additional impact on site security as the property is already enclosed by fencing. These alternatives would not require any extra routine surveillance or special measures by the County Sheriff. Whatever landfill is required by Alternative D would require the same fencing and surveillance as currently provided.

Alternative D would require additional security precautions both at a processing center and waste-to-energy facility because of the increased potential for vandalism at both operations and the added requirement to keep humans and animals from accidental contact with wastes and heavy equipment at the waste-to-energy facility.

Mitigations

Existing site security should be maintained and extended, if necessary, by use of the barbed wire fence for Alternatives A, B, and C. Where additional security is required, a 6-foot high cyclone fence with barbed wire should be installed.

In addition, for Alternative D, to prevent theft of recyclable materials with market value, a 6-foot high cyclone fence with barbed wire and locking gates should be used to enclose the processing center. Collection bins should be stored within a locked building. Site lighting should be installed so that the areas is visible at all times. Occasional or routine inspection by the Sheriff, particularly if publicized in the media, would help discourage vandalism. Similar security precautions should be adopted at the waste-to-energy facility to prevent vandalism as well as accidental human or domestic animal contact with wastes and heavy equipment.

5. Personnel Safety[44]

Setting

Acme reports that its employees are experienced in solid waste handling when they are hired. Subsequently, periodic refresher training programs are conducted. These programs include safety, first aid, and instruction in the use of new equipment and procedures. Personnel safety measures must comply with conditions contained in the Department of Health Services Interim Status Document.[45]

Acme's operations manual has been revised according to Department of Health Services and RCRA requirements. Publication is pending new instructions which are being formulated by the Department of Health Services.

Site employees are provided with such safety equipment as hard hats, goggles, dust masks, coveralls, and gloves. Machinery is equipped with back-up lights. An eye-wash and emergency shower are located on the site.

Phone numbers to use in the event of an emergency are readily available and a list of equipment operators and officers of the company is also provided.

Impacts

If Acme continues to provide safety equipment and to conform to OSHA and other federal and state safety standards, no adverse impacts on employee safety would be expected to occur with Alternatives A, B, C, and D, insofar as a landfill is involved for that alternative on the basis of Acme's current personnel safety practices.

Alternative D would have potential safety hazards resulting from a processing facility and waste-to-energy project. Materials received at a waste processing center would probably be limited to relatively harmless recyclables, although potential hazards would be present to employees in the form of ragged can edges and broken glass. Other hazards would depend on the design and operational practices of each facility.

Mitigations

In Alternative D, mitigations should include provision of employee training, and safety clothing and equipment appropriate to the processing center and waste-to-energy facility. Such training and equipment should be provided by the owner/operator of each facility and conform to applicable federal and state employee safety standards and regulations.

6. Potential for Hazards From Wastes

Setting

As a Class II-1 landfill, Acme is permitted to accept certain Group 1 hazardous (solid) wastes, as well as Groups 2 and 3 wastes. Of the 1982 estimated daily tonnage of 1500 tons of waste acepted at the site, 50 tons consist of Group 1 waste. The major volume, 1450 tons, consists of Group 2 and 3 wastes which includes 180 tons of dewatered sewage sludge from Central Contra Costa Sanitary District's treatment plant. Treated sewage sludge is considered to be a Group 2 waste by the San Francisco Regional Water Quality Control Board. Group 1 wastes disposed of at Acme are limited to wastes specifically permitted by the RWQCB. Most of these wastes are chemical and refinery wastes generated in Contra Costa County.[46] A discussion of these wastes is provided later in this section in Group 1 Wastes.

In California, disposal of Group 1 waste is directly regulated by the State Department of Health Services and the RWQCB. These are the two major agencies that oversee these activities. The DOHS is the permitting agency for Class I sites which accept Group 1 waste. The RWQCB issues Waste Discharge Requirements Orders which designate the wastes that may be discharged or disposed of on a specific site. As discussed in the section, Group 1 Wastes, the DOHS also may prohibit certain toxic wastes from landfill disposal.

Site Areas Permitted - Under conditions of the DOHS Interim Status Document CAD 041835695 issued October 23, 1981, Group 1 solid waste materials are disposed only in the 125-acre Class II-1 site on Acme's property. The Document expressly prohibits hazardous wastes to be disposed of on any portion of the facility which was not actually and lawfully used for the disposal of hazardous wastes as of August 6, 1980.

Also expressly restricted from filling with hazardous wastes are any portions of the property situated within 2,000 feet of permanently occupied residences, human hospital, school for persons under 20 years of age, a day care center for children, or any permanently occupied human habitation other than those used for industrial purposes. This prohibition specifically applies, but is not necessarily limited to the 22-acre area, the inactive 20-acre Class I hazardous waste ponds, and the portions of the 200-acre area (Alternative A) that is within 2000 feet of any of these land uses.[47] (None of the 200-acre area is within 2,000 feet of any of these uses.) The 2000-foot restriction complies with the provisions of Assembly Bill 2370, as amended in 1982, which is described in Chapter 1, Introduction, E. Policy Context. Inasmuch as Acme disagrees with these restrictions, the applicability of this rule is subject to interpretation.

Still pending is the DOHS permit for disposal of Group 1 wastes on the 22-acre site. Acme made application for that permit May 25, 1978.[48] The site was permitted for Groups 2 and 3 wastes only by the State Solid Waste Management Board and the Contra Costa County Department of Health Services in December 1981. The pending permit is not part of the current permit application and EIR/EIS. Further discussion is provided in I. Introduction, D. Regulatory Permit Requirements and Status.

Under provisions of the Regional Water Quality Control Board Waste Requirements Discharge Order 76-37, disposal of Group 2 wastes, liquid or solid is expressly prohibited on the Class I site and within 200 feet of the Concord fault.

Wastes Permitted/Prohibited - Group 1 wastes disposed at the Acme 125-acre Class II-1 site are solid wastes limited to refinery and chemical materials specifically permitted by the RWQCB (Table 6). None of these wastes are radioactive. Certain wastes are specifically prohibited by the DOHS Interim Status Document. Those materials are:

(a) burning wastes

(b) forbidden and Class A explosives as defined in Sections 173.51 and 173.52 Title 49 Code of Federal Regulations

Recent developments on the part of the DOHS and the RWQCB could alter the list of specific wastes that Acme is currently allowed to accept. Under Executive Order B8881, the DOHS is directed to set a schedule to phase out 6 categories of highly toxic wastes from landfill disposal. These substances are: PCB's, pesticides, toxic metals, cyanides, halogenated organics, and

Table 6

GROUP 1 WASTES HANDLED AT ACME FILL

REFINERY WASTES

• Cat Cracker Fines	- (catalyst and coke wastes)
• Boiler Blowdown	- mixture of calcium and magnesium salts
• Centrifuge Waste	- oily silt
• Bleacher House Oily Clays	- oil, lime, calcium, carbonate, and diatomaceous earth

CHEMICAL WASTES

• RM-27 sludge	- Aluminum hydroxide and water
• ASD Filter Cake	- Sodium and calcium salts, lime, sodium carbonate, sodium chloride, calcium carbonate, calcium chloride, diatomaceous earth, and some high molecular weight organic material
• Perma-16 Filter Cake	- Diatomaceous earth, lime, high molecular weight organic material, and some solvent
• Tannery Wastes	
• Sewage Sludge	
• Laboratory Refuse	
• Asbestos Wastes	
• Latex Waste	
• Alkaline Sludge	
• Fly Ash	
• Kidney Machine Wastes	
• Oily Wastes	

Source: Contra Costa County, Solid Waste Management Plan (Draft), 1981.

non-halogenated volatile organics.[49] Alternative technologies now available to handle these highly toxic chemicals include recycling, incineration, chemical oxidation, chemical reduction, chemical dechlorination, thermal destruction, and hydrolysis. Of the 6 categories of highly toxic wastes which were banned from landfills under this Executive Order, toxic metals and non-halogenated volatile organics are present in the Group 1 wastes Acme receives.[50] Halogenated organics, pesticides, and cyanides may also be present.[51] PCB's are not constituents of the Group 1 waste permitted for Acme's site.[52] The phase-out, effective January 1, 1983, is aimed initially to prohibit the higher concentrations of these substances. Lower concentrations are targeted for subsequent phase-out. The program will be implemented through changes in permit conditions for facilities effective on designated dates. No extremely hazardous waste disposal permits allowing land disposal of these wastes will be issued after the phase-out date. How Acme disposal of Group 1 wastes would be affected by this Order would depend on procedures being formulated.

As part of a Management Plan for Group 1 wastes at Acme's Class II-1 site, the RWQCB requested Acme to provide a detailed, quantitative analysis of the site's containment ability.[54] Continued acceptance of Group 1 wastes is related to Acme's plan and analysis.

Manifest Procedures - Federal and state regulations alike require a thorough documentation of Group 1 wastes when hauled from the point of generation to treatment, storage, or disposal (TSD) facilities.[55,56] This monitoring system, known in the industry as the "cradle-to-grave" manifest system requires records to be kept by the generator, the hauler, and the TDS facility. For each incoming load of waste, the hauler must provide Acme with copies of the manifest. As a TSD facility, Acme must retain one copy on file for 3 years, forward another copy to the DOHS where it is to be matched by computer with the copy sent to the DOHS by the generator, and return a third copy to the generator.

In addition, the State DOHS requires Acme to obtain a detailed chemical and physical analysis of a representative sample of the hazardous waste being accepted at the site. At a minimum, this analysis is to contain all the information which must be known to treat, store, or dispose of the waste in accordance with the conditions of the Interim Status Document. Moreover, upon the effective date of the Interim Status Document (October 23, 1981 Acme is required to follow a written waste analysis plan which describes the procedures to be used to comply with the chemical and physical analysis sampling procedure. This plan is subject to approval by the California State Department of Health Services.[57]

Disposal Practices - Group 1 wastes are buried on the 125-acre site in separate trenches away from the working face, as required by conditions of DOHS Interim Status Document. To prevent them from being blown by wind, powders, dusts, or fine solids are handled, treated, stored, and buried in covered containers. If this material is not water-reactive, it may be sprinkled and dampened with water as a slurry. Materials placed in trenches may receive further sprinkling, particularly during the dry season.[58]

Additional conditions are required for disposal of asbestos. Asbestos in sealed, nonreturnable containers must be handled, disposed of, and covered without opening, breaking, or rupturing the containers. Asbestos in bulk must be kept moist enough to keep fibers from becoming airborne.[59]

DOHS Interim Status Document requirements also specify that hazardous waste which is to be buried shall be covered within 24 hours of deposition into a burial area with 6 inches of compacted impermeable soil. The final cover must consist of at least 3 feet of compacted impermeable soil. Sufficient measures such as diversion ditches for the control of surface water, rip-rap to prevent erosion, or any other requirements of the RWQCB to prevent ponding, erosion, or downstream sedimentation must be implemented immediately after application of final cover. In addition, all asbestos-containing wastes destined for disposal at the facility must be covered with at least 6 inches of compacted soil or nonhazardous solid waste withn 24 hours after receipt at the disposal site.

Spill Potential - Group 1 wastes disposed of at Acme Landfill, do not have high potential for fume and liquid escape or explosion. Most of these wastes are refinery and chemical sludges produced in the county. Powdered wastes, such as fly ash and asbestos wastes, are transported in sealed containers in enclosed vehicles. With implementation of Executive Order B 8881, it is possible that Group 1 wastes disposed at Acme may be even more limited than at the present time.

Various governmental steps have already been taken and are currently being formulated to identify spill potential, prevent or reduce the risk of spills, and to establish viable response plans in the event of such occurrences. On the federal level, the Hazardous Materials Transportation Act of 1976 gives the Department of Transportation the authority to regulate hazardous materials that are transported except via certain pipelines. HMTA directs the Department of Transportation to classify any material it designates as hazardous, to establish handling procedures, and to set standards for testing and inspecting hazardous materials. DOT has the authority to require records, reports, and other similar information. Within the past year, the State of California, through the Highway Patrol, has required the estimated 2,500 trucks hauling hazardous wastes to obtain licenses and to undergo annual inspections. Also on the state level, the Office of Emergency Services is preparing the State of California Hazardous Material Incident Response Plan, June 1982 draft, which is currently being reviewed before submittal to the Emergency Council in September. On the regional level, the Association of Bay Area Governments (ABAG) has assembled the San Francisco Bay Area Hazardous Spills Task Force to study prevention, assessment of risks, response and training capabilities and needs in the 9 Bay Area counties. The results of this effort are to be developed into a regional emergency response plan for hazardous materials spills.

In Contra Costa County, the Emergency Service Office is the agency designated to plan emergency response and coordinate appropriate local agencies to respond to spills. (More discussion in Mitigations) In June of this year, the Contra Costa County Board of Supervisors approved the formation of 3 committees to attempt to tighten the county's control of hazardous materials

within the county. One task force has been directed to study ways to improve the county's regulation of the production, transportation, storage, and disposal of hazardous materials and ways to improve coordination of county health, fire, and police agencies. Another task force is to study the needs of private industry and foster cooperation between industry, governmental and community organizations. These two task forces are expected to contribute to the comprehensive study of hazardous materials in Contra Costa County which is being prepared by the Institute for Local Self-Government in Berkeley. A third committee has been directed to draw up a "Right-to-Know" ordinance for Contra Costa County. Such an ordinance would require handlers of hazardous materials to provide information on the quantity and location of toxic materials.

Impacts

Hazardous potential, including spill potential, resulting from Alternatives A, B, and C, and D insofar as a landfill is required are expected to be essentially the same as the current operations or possibly reduced, as a result of increased federal, state and county restrictions. Waste discharge requirements from the RWQCB would restrict Group 1 wastes to those specifically listed at that time for a specific site. These discharge requirements would be developed on the basis of site-specific hydrogeology. Future changes required in acceptance of Group 1 wastes affected by Executive Order B8881 would be determined by the DOHS implementation program. Any portion of Alternative C which falls within the 2000-foot restriction imposed by AB 2370 would be subject to DOHS approval for disposal of Group 1 wastes. In addition, for Alternative D, no current information is available to indicate the exact composition of ash resulting from the waste-to-energy facilities to determine toxic potential.[60]

Mitigations

Acme should continue to conduct its operation in accordance with all applicable regulations and permit conditions for Alternatives A, B, C, and D. In addition, waste discharge requirements issued by the RWQCB should be strictly implemented.

For Alternative D, safety procedures should be adopted at a processing facility and waste-to-energy facility to assure employee safety and to reduce the potential for injury from materials, such as cans and glass, to reduce employee contact with wastes, and to reduce the potential hazard of machinery used in both processes.

Further testing should be conducted by Central Contra Costa County Sanitary District to determine the composition of ash residue from the incineration process in order to formulate appropriate disposal criteria for this residue.

In the case of an accidental spill of any Group 1 waste en route to the landfill, emergency response can be provided by designated federal, state, county, and city agencies in addition to pre-contracted private companies. Table 7 lists government agencies and their specific jurisdictions and responsibilities.

Table 7

EMERGENCY SPILL RESPONSE POTENTIAL

AGENCY	JURISDICTION/RESPONSIBILITY
United States Coast Guard	Jurisdiction for San Francisco Bay, its tributaries, and the Sacramento-San Joaquin Delta
Environmental Protection Agency	Jursidiction for inland spills
State Department of Fish & Game	Jursidiction for oil spills - 10 gallons and less
Regional Water Quality Control Board	Oil spills in excess of 10 barrels
California Department of Transportation (CalTrans)	Responds to spills on State highways and is responsible for actual spill clean-up. Clean-up pre-contracted to private industry.
California Highway Patrol, Local Police, County Sheriff	Responsibility for safe traffic movement around spill areas. (AB 2019 designates authority for the management of the scene of an on-highway hazardous substance spill to the appropriate law enforcement agency having primary traffic investigative authority on the roadway where spill occurs.)
California State Office of Office of Emergency Services	Maintains hotline for receiving reports on spill incidents, recording pertinent information, and notifying appropriate response agencies.
Contra Costa County of Emergency Services	Responsible for coordinating local Office government response to spills or other hazardous material emergencies
Contra Costa County Department of Health Services	Environmental Health Division capable of 24-hour response to hazardous materials spill. Provides aid in identifying the material and assessing the health effects of spilled materials and offering assistance in handling and disposing of spilled material.
Contra Costa County Public Works Department	May be designated to clean spills not on highway
CHEMTREC	24-hour communications center in Washington, D.C. Maintains toll-free phone (800-424-9300). Maintains emergency information on more than 1,000 hazardous materials indexed by chemical and common names. Provides emergency action information and shipper's contact for chemical experts.

Source: Contra Costa County Solid Waste Management Plan (Draft), pp. 119-1111

Footnotes

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[2]Frank Boerger, P.E., Civil Engineer, Harding Lawson Associates, Telephone Conversation, March 31.

[3]Harding Lawson Associates. Impermeable Barriers Acme Landfill, Martinez, California. Report prepared for Acme Fill Corporation, January 23, 1981.

[4]Harding Lawson Associates. Impermeable Barriers Construction Western Boundary Acme Landfill, Martinez, California. Report prepared for Acme Fill Corporation. July 13, 1981. Report indicates results of tests required by the RWQCB to verify permeability and documents construction of barrier.

[5]Harding Lawson Associates. Phased Landfill Development Plan North Part of South Parcel Acme Landfill. Report prepared for Acme Fill Ccorporation, April 13, 1981.

[6]Ibid.

[7]Daniel Balbiani, Harding Lawson Associates. Telephone Conversation March 30.

[8]California Administrative Code, Title 14, Chapter 3, Minimum Standards for Solid Waste Handling and Disposal. Section 17705.

[9]Environmental Protection Agency. Criteria for Classification of Solid Waste Disposal Facilities and Practices; Final, Interim Final, and Proposed Regulations. 40 CFR Part 257.3-8 Federal Register September 13, 1979.

[10]California State Water Resources Control Board. Waste Discharge Requirements for Nonsewerable Waste Disposal to Land. September 1972. Reprinted July 1981. Page 17.

[11]Bay Area Air Pollution Control District (Bay Area Air Quality Management District) Regulation 1, Adopted March 20, 1957, San Francisco, California.

[12]Resource Conservation and Recovery Act of 1976, as amended. Public Law 94-580 94th Congress, October 21, 1976. Subtitle D, Sections 4004, 4005. Environmental Protection Agency, "Criteria for Classification of Solid Waste Disposal Facilities and Handling Practices,: 40 CFR 257.3-7 and 257.3-8 Federal Register September 13, 1979.

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[14]See Public Health and Safety Appendix for list of Site Specific permit conditions prohibiting burning at Acme Landfill.

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[16]Gerald Duarte, Assistant Chief, Contra Costa County Consolidated Fire District, Meeting 23 March.

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[19]"Fire Prevention Pays Off," Waste Age, March 1982, pp. 23, 24.

[20]Frank Boerger, P.E., Civil Engineer, Harding Lawson Associates, Telephone Conversation, 13 July.

[21]"Fire Prevention Pays Off," Waste Age, March 1982, pp. 23, 24.

[22]Loc. cit.

[23]California Administrative Code, Chapter 3, Minimum Standards for Solid Waste Handling and Disposal Section 17225.73.

[24]SSWMB. Landfill Techniques, Seminar Manual, Presented by Emcon Associates. Co-sponsored by the GRCDA and the CRRC. 1979.

[25]See Public Health and Safety Appendix for complete listing of each species.

[26]William B. Treadwell, Supervising Environmental Health Inspector, Contra Costa County Health Services Department, Meeting March 23.

[27]Contra Costa County. Memorandum from J. Michael Walford, Acting Public Works Director and A. A. Dehaesus, Director of Planning to Internal Operations Committee, March 3, 1981, p. 4.

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[34]Andrew Taylor March 31.

[35]California Solid State Waste Management Board. The RCRA Landfill Survey and the State Enforcement Program, Seminar Manual, p. 2(c)-14.

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[37]Federal Aviation Administrative Order Number 5200.5.

[38]Charles Beesley, June 30.

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[42]Frank Boerger, Telephone Conversation, March 31.

[43]Warren E. Rupf, Assistant Sheriff, Office of Field Services, Contra Costa County Sheriff. Meeting, 23 February 1982.

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[45]Department of Health Services, Interim Status Document CAD 041835695 October 23, 1981.

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[52]Wil Bruhns, July 12.

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III ENVIRONMENTAL SETTING, IMPACTS AND RECOMMENDED MITIGATIONS

I. RESOURCE CONSERVATION AND RECOVERY

1. Material Recovery

Setting

a. Current Efforts

In general, four types of material recycling are currently being conducted in Acme's service area: publicly and semi-publicly sponsored multi-material centers, private industry buy-back operations, continuing or occasional volunteer efforts, and landfill salvage.

Of the multi-material centers, the Contra Costa Community Recycling Center (CCCRC) is envisioned by the County as the forerunner of a larger processing center.[1] The CCCRC, which opened in April 1981, is located just outside Martinez in Pacheco near Central Contra Costa Sanitary District's wastewater treatment plant. As of January 1982, the Center was receiving an approximate total of 25 tons a month of mixed materials including aluminum, tin cans, glass, newspaper, cardboard, scrap metal, wine bottles, other recyclable bottles, and motor oil.[2] Contra Costa County, through the Department of Public Works, provides the land. A $74,150.00 State Solid Waste Management Board (SSWMB) grant in 1981 for paving and fencing was stipulated on the basis that the center would operate at least 5 years. The City of Martinez also contributed $1,000 to launch the operation. In addition, the Contra Costa County Board of Supervisors allocated nearly $9,000[3] to pay for grant administration, utilities, and miscellaneous construction. Storage bins are provided by private industry and the center is operated by volunteers.

Another multi-material drop-off donation center is Many Hands, Inc. located between Antioch and Pittsburg. The center accepts glass, cardboard, newspaper, aluminum, and bi-metal cans. Approximately 50 tons per month of materials are received as donations at the site or by truck which collects regularly from businesses and governmental agencies in Antioch, Pittsburg, and Brentwood.[4] Many Hands, Inc. functions primarily as a rehabilitation center for the mentally disabled. Short-Doyle mental health funds are used to pay counselors' salaries and operating expenses. Workers' salaries are derived from revenues from sale of materials to processors. A State Solid Waste Management grant for $64,513 was used to purchase some capital assets in 1979.[5]

Unlike the CCRC and Many Hands, Inc. which operate as donation centers, Valley Disposal is a buy-back operation. Opened in January 1982 on Kazebeer Lane in Walnut Creek, the center is operated by the Mt. Diablo Council Boy Scout troop with proceeds going to the scouts. Land is provided by the City of Walnut Creek Valley Disposal, the franchised collection company in the area, provided equipment and site improvements. Glass, plastic beverage bottles,

aluminum cans, foil, newspaper, and motor oil are purchased at the center.[6] It is too early to determine volume estimates from this center.

A second major type of recycling is conducted by private industry. These operations include secondary fiber and scrap metal dealers, as well as aluminum, glass, and motor oil buy-back programs. Most of these operations are limited to one kind of material (Reynolds Aluminum) or one type of item such as beverage containers (Coors). Recently, however, Mt. Diablo Paper Stock has evolved from a limited material center which bought various paper stocks to a multi-material center that now also purchases bottles and oil. In addition, the center accepts, but does not purchase, scrap metal and bulky appliances.[7]

A third type of recycling effort is generally volunteer-based and operates on a continuing or occasional basis. Such efforts are conducted by civic, religious, or cultural groups. Collected material is usually sold and proceeds benefit various charities or fund-raising efforts.

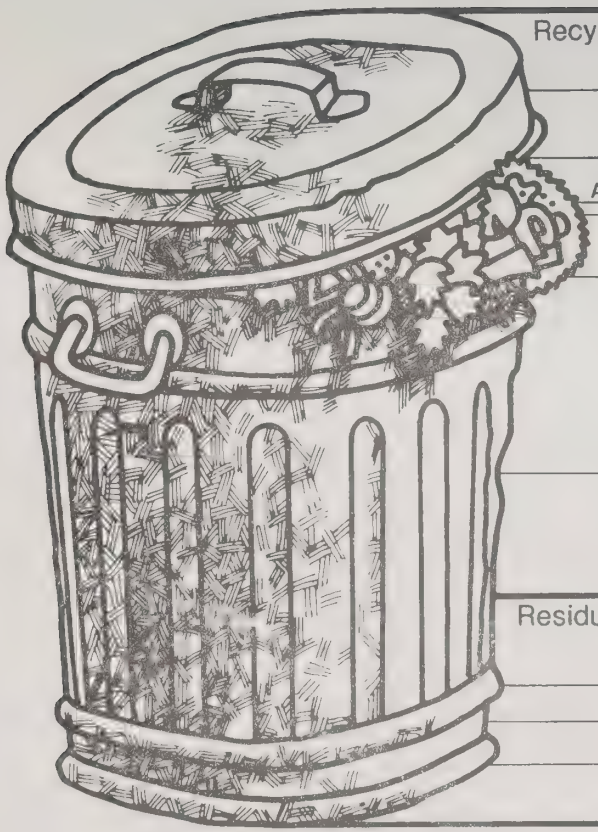
Landfill salvage is conducted by Acme at the site. Acme estimates that approximately 50 percent of the cardboard and corrugated and 80 percent of the large metal appliances are culled from the waste stream as collection trucks and private vehicles dispose their contents at the landfill.[8]

Volume estimates of materials recycled through private industry and Acme landfill salvage are generally not available. This information is considered proprietary. Data is also not available regarding recycling achievements of volunteer groups. Californians Against Waste estimates that the recycling rate for aluminum cans is upwards of 30 percent on a national basis.[9]

It is apparent that there is an interest among the general population and private industry to recycle. It is probable that the people contribute to donation/drop-off recycling efforts primarily to promote environmental and social concerns whereas buy-back efforts may stem, at least in part, from the desire to realize some financial compensation. Private industry on the other hand, must face the economic reality of uncertain and fluctuating markets and the need to reconcile economic cost/benefits.

b. Planned Developments[10]

The County Solid Waste Management Plan (Draft)envisions recycling and waste-to-energy programs as major components of solid waste management aimed at achieving the overall countywide goal of a 30 percent reduction of residential/commercial solid wastes going to landfills by 1990. The Plan recognizes the environmental value of recycling as a way to prolong landfill life and conserve natural resources as well as the social values of community cooperation and common concern inherent in recycling. At the same time, the Plan recognizes waste-to-energy projects as a useful way to tap the energy value of solid waste while conserving natural resources. (Methane recovery is discussed in Section K, Energy.)



Recyclable:	PERCENT BY WEIGHT	
Newsprint	8.8%	75.6 RECYCLABLE
Glass	8.1	
Aluminum 0.7% / Ferrous	5.1	
Corrugated Cardboard	6.5	
Mixed Paper	32.5	
Garden Wastes	13.9	
Residual Wastes:		24.4 RESIDUAL WASTES
Miscellaneous Organics	12.8	
Rubber, Wood & Other Non-Ferrous	3.7	
Miscellaneous Inert Wastes	3.9	
Plastic	4.0	

Source: Communities Service Department, City of El Cerrito, Planning Report: West Contra Costa County Regional Recycling Program, November, 1981.

Drawing courtesy of Oakland Scavenger Company.

TORREY & TORREY INC.
environmental/urban planning and design

Estimated Residential/Commercial Waste Composition

Contra Costa County 1980

EXHIBIT M

For the central county, the major resource conservation recommendations of the Plan set forth in the Planning Statements are:

- Continuation of existing recycling efforts as described in the previous section, a. Current Efforts.

- Operation of an areawide recycling program by 1987. Elements of this program include the development of a central county processing center, curbside collection of recyclables, and a public information program. These elements were all recommended in 1980 Partners for Change - A Scenario for Recycling in Contra Costa County,[11] a report funded by the SSWMB. Already a multi-material center, the CCCRC, has been established in Pacheco and is envisioned as developing into a larger processing center. Curbside programs are being introduced. The City of Concord, on February 22, 1982, adopted an ordinance which would establish a pilot program for curbside collection of recyclables in the City during 1982. In Martinez, curbside recycling program was proposed before the Recycling Committee of the County Board of Supervisors in March 1982.[12] This program, similar to other programs being operated in several Bay Area communities would enable Martinez residents to recycle paper, cans, bottles, and other salvageable materials by placing them on curbs in front of their homes. The Board was requested to authorize staff meetings with the City Council, Martinez Sanitary Service, and the CCCRC.[13] Public information is being conducted on a limited basis, with funds from the CCCRC's grant from the SSWMB being used to publicize the center.

- A study for the County Solid Waste Commission to update the Partners for Change report findings and to examine the feasibility of office paper recycling programs. A white office paper recycling pilot program has been in operation for more than a year in the County Administration Building in Martinez.

- Support for recycling and market development of items not regularly recycled such as garden wastes, plastics, and construction wastes.

- Continued support of the Many Hands, Inc. recycling center.

- Construction and operation of the Central Contra Costa Sanitary District waste-to-energy project if economically feasible and capable of operating with pollution control requirements. This project is described later in this Chapter in Section 2, Waste-to-Energy Projects.

- Co-incineration of sewage sludge and solid wastes.

- Cooperation between private industry and public agencies, between profit and non-profit groups involved in recycling.

This EIR/EIS assumes the continuation of current recycling efforts and focuses on the impacts of the two major components of the County's resource conservation and recovery program: the non-profit, multi-material processing center and the waste-to-energy project proposed by Central Contra Costa Sanitary District.

Beyond County efforts to recover resources, the California Can and Bottle Recycling Initiative, if enacted in the November 2, 1982 election, would establish a statewide beverage container deposit law similar to laws in effect in Vermont, Oregon, Maine, Iowa, Michigan, Connecticut, and Delaware. It would require a minimum 5-cent refundable deposit on all beer and soft drink bottles and cans sold in California.[14]

c. Potential for Material Recovery

For material recovery purposes, it is the residential/commercial portion of the solid waste stream that contains newsprint, glass, ferrous, aluminum, corrugated, and mixed paper. These are the materials that have potential for diversion from landfill by curbside collection, buy-back programs, donation or drop-off centers, and satellite programs.

Of the total 1344 tons disposed daily at Acme landfill in 1980, approximately 777 tons a day (57.8 percent) consisted of residential/commercial solid waste from Acme's service area in Contra Costa County. (This amount does not include 38 TPD residential/commercial solid waste from Benicia in Solano County.)[14] Exhibit M shows the percent by weight of these recyclable materials as estimated for Contra Costa County in 1981.[15]

The 1980 Partners for Change Study showed a potential landfill diversion rate of 51.5 tons per day of recyclables with a 50 percent participation rate.[16] According to the recycling simulation shown in the County Solid Waste Management Plan (Draft), a central county regional recycling center could recover and divert from Acme 77 tons per day of residential/commercial solid wastes generated in central Contra Costa County (Benicia excluded). Including the entire recycling effort that could occur by adding Antioch and Rodeo to comprise all of Acme's Contra Costa County service area, the waste quantities recovered and diverted from landfill would be 79 tons per day:[17]

77	TPD	Central Costa County
1	TPD	Antioch (diverted to Many Hands, Inc.)
1	TPD	Rodeo (diverted to West Contra Costa Recycling Center)
79	TPD	Total Acme Contra Costa County Service Area (Benicia excluded)

The combined percentage reduction of these tonnages is approximately 10 percent of the residential/commercial wastes of the 777 TPD 1980 wastes received at Acme (Benicia excluded).

The daily tonnage rate used in the simulation study is based on the type of recycling program in the franchised collection areas within Acme's services area. A reduction of the waste generation factor of 20 percent was used for areas, such as Concord and Pleasant Hill, served by a comprehensive recycling program. A reduction of 10 percent was used for areas like Walnut Creek not served by a curbside pick-up but located close enough to bring recyclables to a recycling center, whereas a reduction rate of 5 percent was used for areas like Clayton and San Ramon, which are served by a satellite station.[18]

The impact discussion that follows and the related economic analysis in Section K, Economics, are based on the Partners for Change 50 TPD Central County processing center and the ABAG 77 TPD facility shown in the County Solid Waste Management Plan (Draft).

Impacts

Implementation of Alternatives A, B, and C would have no effect on current and planned material recovery efforts. It is expected that any and all of the existing public, semi-public, and private endeavors would continue to operate, influenced more by material market conditions than by the availability of landfill. In actuality, a landfill would be required to handle nonrecyclable waste and to accommodate recyclables when markets are depressed. By providing additional space for continued landfill operations, Alternatives A, B, and C would reduce somewhat the pressure for recycling activities.

It is unlikely that Alternative D could be in place and operating at full capacity in time to have any significant impact in extending the life span of the current 125- and 22-acre site operations.

By itself, the material recovery portion of Alternative D would increase Acme's total site life by one year. Without material recovery, the Solid Waste Management Plan (Draft) projects that Acme would be 100 percent full by 1994; with material recovery, the landfill would gain one more year to 1995 before completion.[19] This expectancy is based on a 79 TPD material recovery or diversion from landfill.

The ultimate impact of the material recovery and recycling component of Alternative D depends on many factors, including dependable markets and high participation. (Dependable markets are discussed further in Section K, Economics, Other Methods of Disposal.) High participation can be fostered by public information programs, financial incentives or disincentives, local ordinances and devising and adopting a recycling system that requires minimal time and effort for participants while assuring dependable service. Specifically, these elements include:

Public Information Program

- A continuous, on-going public information program is needed to create and, as importantly, maintain, an awareness of the benefits of

recycling. These benefits can include the conservation and preservation of environmental resources such as non-renewable sources of energy used to create products from virgin materials, and conservation of raw materials such as wood and metals. In addition, a labor-intensive recycling program, that is, one that does not use integrated mechanical recovery systems, can provide a source of employment for many physically or mentally disadvantaged persons. At the present time, the State Department of Rehabilitation places handicapped workers at E.C.ology. Many Hands, Inc. in Antioch/Pittsburg, functions primarily as a rehabilitation center for the mentally disabled. With a greater public awareness of such ancillary benefits of recycling, a greater public participation might be achieved.

Curbside Collection

- The Model Solid Waste Ordinance that is being developed by the Solid Waste Commission should consider the possibility of initiating curbside collection or recyclables.

- Financial incentives, such as lower collection rates for source-separated materials versus mixed garbage, or higher rates for non-separated materials could be used to encourage people to separate materials for curbside collection. Such practices would require cooperation and negotiation between the franchised collectors and the franchising entities.

- It is important to recognize that recycling requires effort, time, and space in a world where all three are becoming increasingly scarce. Traditionally, most bottles and cans must be washed, and labels and extraneous fittings removed. Newspapers must be stacked within specific dimensions and tied. Space is required to store recyclables separately, both within and outside the dwellings. The lack of apartment storage space can inhibit recycling efforts. Curbside collection methods requiring the least amount of preparation and processing are likely to encourage the greatest participation. Despite the obstacles, the curbside collection program conducted by E.C.ology in El Cerrito has obtained a 50 percent participation rate although the newspapers, aluminum, cans, and glass must be bundled separately.[20] Another system currently being conducted in Islip, New York, is based on the use of one container for all collectible recyclables and another container for all other household wastes.[21] Such a system offers obvious benefits in reducing the effort and time required for individuals to participate in recycling.

- Dependable, regular collections are critical for a successful recycling program. Collections of recyclables on the same day as regular collection ensure a higher participation rate than occasional, or less frequent, collections. The high participation rate of E.C.ology's

curbside collection program may be due, in large part, to the weekly pick-up of recyclables on the same day of regular garbage collection. Residents are confused when collection is sporadic and forgetful when collection occurs infrequently, such as once a month, even if such collection falls on the same day of the month. Residents who take pride in their property are also reluctant to leave recyclables out for collection only to have these materials linger on the curb if collection does not occur on schedule. Stacked materials can be unsightly and create an aesthetic problem in neighborhoods.

- Also important to the financial success of a recycling program is the guarantee that items left for curbside collection are collected by officially designated parties. An ordinance, similar to the one adopted in Berkeley in 1974, is one way to help prevent the theft of such materials.

- Another factor that is critical to the potential impact of Alternative D is the participation and endorsement of the franchised collectors. It is generally agreed that the fastest, least costly method of collection is the pick-up of mixed solid waste. Curbside collection of source-separated materials requires either trucks, designed to accommodate several separated materials, or multiple collections with different vehicles for different materials. In either case, collectors' expenses could increase in order to provide the necessary equipment and labor.

Purchase or Buy Back Program

- High participation in a recycling program also depends on the number of ways people can participate. While curbside collection can offer a certain degree of convenience, it must be recognized that people would be relinquishing materials that have a certain monetary value in exchange for this convenience. A processing center that would provide a purchase or buy-back program for several materials, such as newspaper, glass, wine bottles, aluminum, bi-metal cans, and motor oil, could attract individuals and groups that recycle to realize financial return.

Satellite Program

- The potential impact of Alternative D could also be increased by including a Satellite Program such as the one conducted by E.C.ology. As currently practiced by this recycling center, materials are collected from special containers that are maintained in large condominium and apartment complexes.

Office Paper Collection Program

- Another method to increase the impact of Alternative D would be to continue and expand the high-grade office paper collection pilot program. For this component, white office paper, computer print-out paper, ledger paper, and corrugated cardboard would be collected on a regular basis from county and city offices, office complexes, and special depots and brought to a processing center.

Donation Program

- Provisions should be made for the generosity and goodwill of people and organizations who wish to preserve the environment and contribute to social goals without financial reward or collection convenience. A processing center can serve as a central collection center for this purpose. Bins should be continually available for donations of traditionally recyclable materials such as newsprint, glass, aluminum, bi-metal cans, and motor oil. In addition, special bins could also be maintained at the processing center for such groups as Goodwill and St. Vincent de Paul to provide one-stop convenience for those who wish to donate items not normally accepted for recycling including clothing, furniture, appliances, and bric a brac.

If the California Can & Bottle Recycling Initiative wins in the November 1982 election, it is estimated, on the basis of other states' experience with similar bottle deposit laws, that approximately 90 percent of beverage containers would be recycled.[22] It is difficult to predict with any degree of accuracy what effects this initiative would have on increasing the impact of Alternative D and, thus, how it would extend Acme's site life.

Mitigations

No mitigations required for Alternatives A, B, and C.

As the County Solid Waste Management Plan notes, "...concern has been raised at local and State levels that government-subsidized recycling programs may have an adverse effect on nonsubsidized private businesses. Some of the issues raised include ..., unfair competition, displacement of nonsubsidized workers with subsidized workers, and inefficient use of tax funds."[23] City Councils and public agencies, such as the County Community Services Department and Public Works Department should involve private industry from the beginning of any multi-material recycling project to respond to concerns that public recycling efforts should be integrated with private recycling and salvage industries and minimize potential problems. Such cooperative efforts might be initiated through joint meetings and seminars. One example is the current cooperative effort being sought by the County Board of Supervisors to involve Martinez Sanitary Service, the CCCRC, and the Martinez City Council in the proposed curbside pilot program in that city.

2. Waste-to-Energy Project

Setting

Contra Costa Central Sanitary District (CCCSD) is examining the feasibility of constructing a waste-to-energy project which would incinerate solid waste to produce electricity and incinerate sludge produced by the District's wastewaster treatment system. The concept of this project evolved in the early 1970's and initial testing was conducted with a grant provided under the Federal Water Pollution Control Act. Subsequently the 1978 San Francisco Regional Wastewater Solids Study recommended a two-stage program to implement a larger scale energy-generating project at CCCSD. A feasibility and predesign engineering study, initiated through a grant from the California State Solid Waste Management Board and District funds, in January 1981 is expected to be completed in 1982.[24]

Two separate projects have been identified as capable of implementation. These projects, which are independent of each other are:[25]

Title 1 - Sludge Combustion with Limited Solid Waste

This project would retrofit one existing sludge-burning furnace at the treatment plant for starved air combustion of sludge cake, using refuse-derived gaseous fuel from two modular combustion units. These units are both capable of burning solid waste. Title 1 would handle 116 to 260 TPD of solid wastes and incinerate all CCCSD's sludge.* This project could be expanded to produce excess electricity. Construction is estimated to cost $25 million to build and would employ 24 full-time employees. The tipping fee associated with Title 1 is unknown.

Title 2 - Generation of Electricity by Incinerating Solid Waste

This project would provide two 450-TPD capacity mass burning waterwall furnace/boiler systems and a 20 megawatt steam turbine electric generator. Title 2 would incinerate 884 TPD of solid wastes but does not provide for sludge incineration. It would produce excess electricity for sale to PG&E. The new power generated by the proposed Title 2 project is the equivalent of 215 barrels of oil a day.[26] Capital costs to construct Title 2 would be approximately $165 million (1986 dollars). It would employ 34 full-time employees. A net tipping fee of $12.11 per ton (1988 dollars) is estimated in the first full year of operation in 1988.

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*Recent Regional Wate rOuality Control Baord reports indicate 180 wet TPD of sludge. The District is considering changing its waste-water treatment procedures; as a result dried sludge may be reduced to 50 TPD. This project is in the design stage, and a construction date is not known.

Both projects use mass burning technology which does not require processing of the wastes before incineration or "front-end" preparation. The system can handle bulky items on its mechanical grate. Materials to be incinerated are moved through the furnace on a continuously metered mechanical grate. Residues are discharged into a water-sealed trough at the other end of the furnace.[27]

The Title 2 project uses proven technology similar to mass burning waterwall furnace/boiler systems in use in Europe, Japan, and the United States in Saugus, Massachusetts; Nashville; Chicago; Harrisburg, Pennsylvania; and Hampton, Virginia. The Title 1 incinerator is used successfully in many facilities in the United States, but the proposed connection of the incinerator to CCCSD's existing sludge burning furnace is a new application of this technology.[28,29]

Title 2 assumes an 85 percent availability factor: the facility would not be operational 15 percent of the time because of maintenance. When the facility is non-operational, Title 2 further assumes that the by-passed waste would be disposed of, on a fee basis, at Acme Fill. Bottom ash and other residues would also be disposed of at Acme.

Although the Title 1 project was initially perceived as the first project to be implemented, the findings of the Predesign Engineering investigations indicate that Title 2 should proceed first with Title 1 deferred. Accordingly, no schedule has been set for Title 1 but CCCSD is proposing the Title 2 should be planned for completion by 1987.[30]

According to the Solid Waste Management Plan, the District intends to formulate by the first quarter of 1982 appropriate implementation plans for advancing Title 1 and/or Title 2 through design, construction, and start-up and address the technological, economic, environmental, and institutional problems that need to be overcome.[31]

Impacts

Alternatives A, B, and C would not have any impacts on the proposed waste-to-energy projects.

Alternative D would provide for waste-to-energy conversion. On the basis of the proposed CCCSD Title 1 and Title 2 projects, Alternative D would still require a landfill to accommodate remaining solid wastes, as well as bottom ash and other residues. In addition, a landfill would be requried for disposal of all solid wastes generated when the facility is not operating.

- Title 1 would accommodate a total of 196 TPD comprised of 180 tons of sludge currently being landfilled and 116 tons of other solid waste. On the basis of 1982 estimated daily tonnage of 1500 tons, 1204 TPD would require a landfill. It is unknown what quantity of ash would remain and require a landfill.

- Title 2 would incinerate 884 TPD of municipal solid waste. A landfill would be required for approximately 1059 TPD. This total includes 616 TPD solid waste going directly to the landfill plus 443 TPD which would consist of 310 tons bottom ash and other residues and 133 average daily tons by-passed or sent directly to Acme the 15 percent of the time the facility is non-operational. These projections are based on 1982 volume estimates of 1500 tons per day generated in Acme's service area.

- Title 1 and Title 2 would divert 296 TPD and 884 TPD, respectively, or a total of 1180 TPD of solid wastes. A landfill would be required for 763 TPD consisting of 320 TPD of solid waste going directly to the landfill and 310 TPD bottom ash and other residues as well as an average of 133 daily tons by-passed or sent directly to Acme the 15 percent of the time the facility is non-operational. It is unknown what quantity of ash residues from Title 1 would require a landfill. These calculations are based on 1982 volume estimates of 1500 tons per day generated in Acme's service area.

- With respect to extending site life, Title 2 alone would extend Acme's site life by 5 years.[32] The simulation of the effect of the CCCSD projects showed that the life of Acme Fill would be extended from 1994 to 1999 with the waste-to-energy project alone. This site life is based on the use the current 125- and 22-acre sites, full use of the 200-acre area (Alternative A), the 178-acre southern parcel (Alternative C), the 20-acre currently non-operational Class I site and two other areas not now owned by Acme. The simulation assumes that Acme has a remaining capacity of 4,000 acres in 1980 and, without the waste-to-energy project, would be completely filled in 1994. A 1985 start-up date for the waste-to-energy facility is also assumed.[33]

The mass burning technology that would be used by both Title 1 and Title 2 has the advantageous impact of being able to accept waste as received without the necessity of processing before incineration. In this way, the system design is relatively simple and thereby more reliable and less costly than systems that depend on elaborate "front-end" mechanical processing.

By having the ability to burn all materials, the waste-to-energy project offers a positive impact of enabling the central County's overall solid waste management system, from collection through disposal, to function even when markets for recycling materials are unfavorable. If ever market conditions are so depressed as to seriously threaten material recycling projects, the entire composition, if not the entire quantity, of the solid waste stream could be processed by the waste-to-energy project.

Title 1 use of a new application of connecting an incinerator to the District's existing sludge burning furnace could require a longer testing period than

anticipated, more frequent and longer maintenance periods than planned and, in the worst possible case, could produce a situation where the project is unfeasible and ultimately abandoned. Such situations (with different technology) have occurred in the United States. The most recent was a facility in Milwaukee, Wisconsin. In the case of Central Contra Costa Sanitary District, if Title 1 is closed, 116 TPD of solid wastes and all the District's sludge would require landfill.

A possible adverse impact of any waste-to-energy conversion that uses mass burning is the increase in ash that may require special disposal[34]. No current information is available to indicate the exact composition of ash that would remain from either Title 1 or Title 2 project. The analysis that has been conducted indicates that some of the ash constituents can vary widely.[35]

Many obstacles to the implementation of a waste-to-energy facility could affect solid waste disposal requirements. Considering that many federal sources intended to fund refuse-to-energy projects, such as the Energy Security Act, have not been funded,[36] and that existing high interest rates restrict traditional funding sources, it is possible that Title 2 start-up could be delayed well beyond 1987. Further delays could also occur from environmental concerns raised during the permitting process. Required design modifications could also extend start-up date. If such delays occur, the 884 TPD of solid waste designated for Title 2 incinceration would have to be accommodated by other means of disposal.

Mitigations

Based on current rates of fill, compaction and final slope, Acme is expected to complete the current 125- and 22-acre operational areas by 1983. Additional landfill space should be assured to accommodate solid wastes between 1983 and the currently projected Title 2 start-up date of 1987, or later if delays occur. Alternative A, by extending Acme's site life to 1989, would provide adequate capacity until that time.

Adequate landfill should also be assured to handle non-incinerated solid wastes and ash residues of Title 1 and Title 2 projects for the life of the energy-to-waste facility:

Title 1	1228 TPD
Title 2	560 TPD
Title 1 and Title 2 combined	444 TPD

Sufficient landfill capacity should be assured to accommodate the 116 TPD of solid wastes and all the District's sludge in the event that project should experience unforeseen difficulties resulting in additional maintenance or closure from the use of a new application of connecting an incinerator to the District's existing sludge burning furnace.

Further testing must be conducted by Central Contra Costa Sanitary District using new EPA protocols to determine whether the ash residue is "hazardous" or requires special disposal.[37] Depending on the outcome of such tests, it is possible that additional Group 1 disposal space should be required by Acme or other Class I or Classs II-1 landfill would be needed. Acme Landfill and the District would have to comply with Waste Discharge Orders issued by the Regional Water Quality Control Board (RWQCB) and permit requirements of the State Department of Health Services for the disposal of ash.

To prevent ash from blowing at the landfill, additional procedures, such as placing ash in containers, or wetting and spraying the ash followed by immediate mixing and cover application, may be necessary. Ash disposal practices may need to be modified or suspended on windy days.[38]

3. Combined Material Recovery and Waste-to-Energy Facility

Setting

A comprehensive resource conservation and recovery program would include material recovery as described in the first section of this chapter and waste-to-energy projects. All the current material recovery efforts now being conducted in Acme's service area and the addition of planned programs and features recommended in this EIR/EIS would be included. Waste-to-Energy would consist of both Title 1 and Title 2 projects.

Impacts

The simulation results shown in the County Solid Waste Management Plan (Draft) projected an extension of Acme's site life to 2000 with combined material recovery and waste-to-energy projects. This is one year beyond the 1999 date with waste-to-energy alone or 4 years beyond 1995 with material recovery alone, or 6 years beyond expected 1994 closure without any recovery beyond then-current 1980 current levels of material recycling.[39] The projection assumes the use of Acme's current 125- and 22-acre operations, the full use of the 200-acre parcel (Alternative A), use of the 178-acre southern parcel (Alternative C), use of the currently non-operational Class I site, and use of 2 other parcels not now owned by Acme. Material recovery is assumed at the rate of 79 TPD diverted from Acme Fill. It is not known whether both Title 1 and 2 were assumed or if Title 2 was used in the study although it was assumed that the project would be operational by 1985.

Mitigations

No mitigations are required other than appropriate mitigations recommended for Material Recovery and Waste-to-Energy Facilities.

Footnotes

[1]Contra Costa County, Solid Waste Management Plan, Draft 12/81 Revised Janaury 1982.

[2]Contra Costa Community Recycling Center, Marilyn McKinney, Meeting 1 March 1982.

[3]Contra Costa County, Public Works Department, Environmental Control, Dave Okita, Telephone Conversation, March 22.

[4]Many Hands, Inc., Bud Ryne, Telephone Conversation, 10 March 1982.

[5]Contra Costa County, Solid Waste Management Plan, p. 6-6.

[6]Valley Disposal, Telephone Conversation, 2 March 1982.

[7]Mt. Diablo Paper Stock, Telephone Conversation, 2 March 1982.

[8]Acme Fill Corporation

[9]Californians Against Waste, Ross Pumphrey, Telephone Conversation, April 1982.

[10]Contra Costa County, Solid Waste Management Plan, Part I, Planning Statements and Part III, Chapter 6, Resource Recovery.

[11]Contra Costa County, Community Services Department, Partners for Change: A Scenario for Recycling in Contra Costa, December 1980.

[12]Martinez News Gazette, "Curbside Recycling Proposed," 23 March 1982.

[13]Martinez News Gazette, "City, Sanitary Company Discuss Recycling Plan," 27 March 1982.

[14]Association of Bay Area Governments, Computer Program, Solid Waste Projections, 1980.

[15]City of El Cerrito, Community Service Department, Planning Report: West Contra Costa County Regional Recycling Program, November 1981.

[16]Contra Costa County, Community Services Department, Partners for Change, p. 7-3.

[17]Contra Costa County, Solid Waste Management Plan, pp. 6-15 through pp. 6-17.

[18]Contra Costa County, Solid Waste Management Plan, p. 6-13.

[19]Contra Costa County, Solid Waste Mangement Plan, Table 8-7, p. 8-13.

[20]City of El Cerrito, Community Services Department, Joel C. Witherell, Director, Meeting 3 March 1982.

[21]Joel C. Witherell, 3 March 1982.

[22]CO-OP News, "Recycling Bill Endorsed by COOP Will Appear on November Ballot," Vol. XXX, No. 14, (April 5, 1982), pp. 2 and 6.

[23]Contra Costa County, Solid Waste Management Plan, pp. 6-12.

[24]Wegman/Carollo Engineers, Predesign Engineering for Solid Waste-to-Energy Project. Volume 5 Preliminary Environmental Assessment. Draft Final Report. Prepared for Central Contra Costa Sanitary District, Walnut Creek, California, February 1981, pp. 1-1, 1-2.

[25]Central Contra Costa Sanitary District, Jay McCoy, Engineer, Telephone Conversation, 4 March 1982 and Steve McDonald, Associate Engineer, Special Project Engineering Division, Meeting 1 March 1982.

[26]Wegman/Carollo Engineers, p. 5-7.

[27]Ibid., p. 1-4, 1-5.

[28]Loc. Cit.

[29]Contra Costa County Public Works Department, Memorandum from J. Michael Walford, Public Works Director to Internal Operations Committee, Subject: Report on the Central Contra Costa Sanitary District Waste-to-Energy Project, March 1, 1982, p. 2.

[30]Wegman/Carollo Engineers, p. 1-3.

[31]Contra Costa County, Solid Waste Mangement Plan, pp 6-19.

[32]Ibid., p. 3.

[33]Solid Waste Management Plan, pp. 6-21 and 6-23.

[34]State Solid Waste Management Board, Materials and Energy Recovery From Solid Waste - A California Overview, Seminar Manual, January 1980.

[35]Wegman/Carollo Engineers, p. 4-2.

[36]Wade St. Clair, "Funding Cuts to Slow Recovery Project," Solid Wastes Mangement, Vol 25, No. 1, (January 1982), p. 42.

[37]Wegman/Carollo Engineers, p. 4-2.

[38]Ibid, p. 4-4.

[39]Solid Waste Management Plan, pp 8-13.

J. ENERGY

1. Site Vehicles Operation

Setting

The following vehicular equipment is currently in operation at Acme Landfill:[1]

3 D8K Caterpillar dozers
1 D6 Caterpillar dozers
1 12E Caterpillar Road Grader
1 1214E Huber 3 wheel roller
1 C451A Hystar landfill compactor
1 370 Rex Trash compactor
1 TS18 Terex Euclid scraper
1 Rubber tire loader
2 water trucks (approximately 1500 gallons each)
1 1000-gallon mobile water tank equipped with pump
1 1500-gallon water trailer
1 fire truck (150 gallon)

Fuel consumption is considered proprietary information and not readily available.

Impacts

Current fuel consumption for site vehicular use is indeterminate. Therefore future fuel use for Alternatives A, B and C and D, insofar as a landfill is required, cannot be projected.

Alternatives A, B, and C would require the same equipment, or similar, for continuation of landfill operations. Therefore, no new impacts would be expected for these alternatives. Although Alternative D might require less landfill equipment, other heavy equipment, such as caterpillar dozers, would be required at the waste-to-energy facility. A waste processing facility would require a baler and pick-up truck. Thus, operational vehicle energy consumption with Alternative D would be essentially the same or slightly less than vehicle energy consumption with Alternatives A, B, and C.

If Acme should have more than one site area available at any time, actual disposal operations would occur on only one area. Equipment duplication would not be necessary. Alternative operational areas are necessary to respond to weather conditions.

Mitigations

Acme should consider fuel conservation factors when selecting new equipment. In addition, Acme should initiate a frequent and regular preventative

maintenance program for existing equipment to keep it operating with as much fuel efficiency as possible.

2. Franchised Collection Trucks and Private Vehicle Operation

Setting

Approximately 800 vehicles including franchised collection trucks and private vehicles use Acme site on the typical summer weekday. This number increases to approximately 917 on Saturdays.[2] The current rate of energy consumption by these vehicles is indeterminate.

Impacts

Alternatives A, B, and C, which continue disposal operations on essentially the same level as existing operations, are not expected to have any impact on franchised collection trucks and private vehicle operation and related energy use in terms of Acme landfill. Any increase in traffic generated by Acme landfill and the energy associated with that traffic is expected to result from increased population and solid waste disposal requirements related to that increase rather than continuing operations at Acme.[3]

Alternative D would require approximately the same number of collection trucks, but fewer of these would travel to and from Acme. Most would travel to and from the waste-to-energy facility. Travel distance and related energy consumption for most of these collection vehicles should be somewhat less than current use since the processing facility is approximately 5 one-way or 10-round trip miles south of the landfill and closer to most collection areas.

In addition, depending on the method of curbside collection and the extent of other programs (satellite, office paper collection), the energy required by collection vehicles for the material recovery component of Alternative D might be the same as or greater than current collection vehicle usage. Moreover, the waste-to-energy facility would require truck travel of approximately 240 miles per day between the facility and Acme landfill. This is an 8 percent increase in the average mileage now driven.[4]

Recommended Mitigations

In selecting a curbside collection program and determining the extent of related programs, such as satellite and office paper programs, consideration should be given to the total energy use that would be required by various types of collection systems and programs. If feasible, programs which require the least fuel should be selected.

Preventive vehicular maintenance should be practiced by the collection companies to assure that vehicles perform at their most energy-efficient level.

3. Landfill Electrical Use

Setting

Electricity is supplied to Acme Landfill by PG&E. Permanent light fixtures located around the entrance gate are used at night for security and to light the area for member collector firms who use the site.

Portable lamps are available if necessary for night-time operations.

Impacts

No impacts are expected for Alternatives A, B, C, and to the extent that a landfill is required, for Alternative D. Alternative D would require an additional indeterminate amount of lighting at a processing center and a waste-to-energy facility both for operations and security.

Mitigations

The extent of lighting in new landfill areas should comply with California State Department of Health Services lighting requirements set forth in any permit DOHS issues.

Lighting required for a processing Center and a waste-to-energy facility for Alternative D should incorporate energy-efficient technology. Outdoor lighting should be directed away from adjacent activities.

4. Methane Recovery

Setting[5]

Virtually every landfill with decaying organic waste produces methane. As the organic material decays, it produces bacteria that release gases. Methane develops in phases. Initially, during a phase which can last several days to months, a relatively high proportion of oxygen in the fill promotes aerobic decomposition which uses the oxygen and produces carbon dioxide as the principle gas. With time, as anerobic conditions prevail, methane and carbon dioxide, with traces of other gases are produced in greater proportion.

Studies conducted for the Methane Recovery Project sponsored by Acme, Getty Synthetic Fuels, Inc. and the Contra Costa County Central Sanitary District show that the gases produced in the current landfill operation are:

Landfill Gas Components

Gas Component	Acme Component[6] Approximate Percentage	Average Percentage Range*[7]
Methane (CH_4)	57	44** - 70
Carbon Dioxide (CO_2)	42	30 - 53
Nitrogen (N)	.15	3** - 21
Hydrogen (H)	.7	
Oxygen (O)	.1	Trace
Non-methane Hydrocarbon (C_2+) (C_7H_{16})	<.05	Trace
Toluene (C_7H_8)	***	Trace
Benzene (C_6H_6)	***	Trace
Argon (Ar)	****	Trace

* Found in other landfills
** Mountain View fill
*** Not measured. Included in non-methane hydrocarbon.
**** Not measured. If present, amount would be trace only.

Acme Landfill has entered into an agreement with Getty Synthetic Fuels, Inc. to recover the landfill gas on Acme's current 125-acre operational site for processing and subsequent delivery to Central Sanitary District. Approximately 13 wells have been emplaced in Acme's 125-acre site with ancillary pipes to draw the gas by vacuum to the processing plant. The plant, located on Acme's property, was constructed by Getty between 1981 and 1982. It is in the testing stages.[8]

At the plant, gas is processed to remove water vapor and some trace components, and compressed to 80 pounds per square inch for transmission to Central Sanitary District via a 3-mile pipeline for use in the District's treatment plant boilers.[9]

Acme and Getty have a five-year contract with provision for one-year renewals on a year-by-year basis. The contract between Getty and Central Sanitary Dsitrict is on a guarantee take or pay basis.[10]

Methane recovery potential duration for this portion of Acme's property is estimated to range from 7 to 14 years. Between 1 and 2 million cubic feet of landfill gas (57 percent methane) is being recovered with 550 to 650 Btu's per standard cubic foot.[11]

Impacts

Alternatives A, B, and C could have a positive energy impact from methane recovery potential. The contract between Acme and Getty allows for potential expansion of methane recovery operations depending on future feasibility studies and mutual agreement among participating parties. The new processing plant, which can now process approximately 2 million cubic feet of landfill gas per day, is designed for capacity increase of at least 50 percent with installation of another compressor without changing downstream capacity.

The site's propensity for methane production is a function of many of the factors that are present for the current 125-acre site and would be essentially the same for Alternatives A, B, and C. These factors include:[12,13] the amount of oxygen available, the organic content of the solid wastes, particle size and degree of compaction, and the amount of moisture available. In general, high organic content and moisture increase gas production. Smaller particle size, by exposing more of the refuse to bacterial action, may have a similar effect. Densely compacted refuse may decompose at a slower rate than loosely compacted refuse and gas production may be prolonged in densely compacted landfills. Generally, methane formation is enhanced as the moisture content increases. Optimal anaerobic gas production occurs when landfill temperatures are between 90 and 95°F. Another factor which affects landfill gas production is pH. Methanogenic bacteria need a pH near 7.0 to produce optimal amounts of methane. These organisms are severely inhibited when the pH is outside the range of 6 to 8. It is expected that these factors would all be similar in Alternatives A, B, and C to current 125-acre site conditions.

It is not possible to predict the comparative quantity of methane that could be generated by Alternatives A, B, C, and D in relation to the amount of energy used for landfill operations since equipment fuel consumption and electrical use are indeterminate at this time.

Alternative D would have a greatly reduced potential for the generation of landfill gas and the energy potential of methane. The sterile ash contains none of the typical organic material in refuse which causes odors and produces various gases within landfills. The ash would tend to dilute the remaining municipal refuse deposited at any landfill associated with Alternative D and reduce gas production.[14]

Mitigations

No mitigations are recommended.

Footnotes

[1]Harding Lawson Associates, Transmittal/Memorandum from Daniel Balbiani, 6 April 1982.

[2]Goodrich Consulting Group, Acme Landfill Traffic Preliminary Draft, p. 4.

[3]Loc. Cit.

[4]Wegman/Carollo Engineers, Predesign Engineering for Solid waste-to-Energy Project. Volume 5 Preliminary Enviornmental Assessment. Draft Final Report. Prepared for Central Contra Costa Sanitary District, Walnut Creek, California, February 1982, pp. 4-2.

[5]Barbara E. Witte, Potential for Methane Gas Recovery in the Bay Area, Unpublished Report prepared in association with Easley & Brassy Corporation, San Francisco, 1974.

[6]Getty Synthetic Fuels, Inc., Paul Stillman, Vice President, Engineering, Telephone Conversations, 15 April, 1 July, 14 July, 1982.

[7]Barbara Witte

[8]Getty Synthetic Fuels, Inc., James Rawson, Manager, Marketing, Telephone Conversation, March 1982.

[9]James Rawson

[10]James Rawson

[11]James Rawson

[12]SSWMB. Leachate/Landfill Gas Control Technology. Seminar Manual. Presented by Raymond Vail and Associates, Consulting Engineers, Summer 1980.

[13]SSWMB. Landfill Techniques Seminar Manual. Sponsored by the SSWMB and Governmental Refuse Collection and Disposal Association (GRCDA), and the California Refuse Removal Council (CRRC). Presented by Emcon Associates. 1979.

[14]Wegman/Carollo Engineers, pp. 4-5.

K. ECONOMICS

This section examines the general relationship between Acme Fill Corporation and the economy of Contra Costa County. The County's economy is described in terms of population and housing, employment and income. Public fiscal aspects of Acme's operation are included as well as costs for collection, hauling and landfill in addition to the costs of other methods of disposal.

The Acme's sanitary landfill, located in central county near Martinez, is a significant factor in the lives of residents and businesses in the County. By disposing of approximately two-thirds of the County's solid waste, Acme landfill is vital for the efficient functioning of households, businesses, industry, and government.[1] At the present time it is the only means of disposing of large amounts of solid wastes generated in the central county. The service area of the Acme Landfill and the volume it accommodates are discussed in I. Introduction.

The continued growth in population and employment in the County is predicated on a supportive infrastructure. Part of this infrastructure is the proper disposal of solid wastes. Acme Fill and other sanitary landfills in the County are expected to provide a portion of the infrastructure to support the County's continued growth.

Acme's landfill disposes of solid wastes generated by the residential, commercial, industrial, governmental and agricultural sectors of the County's economy. As a Class II-1 landfill site, it receives garbage (food residues) and rubbish originating from residential households. From the commercial sector it receives rubbish (such as, metal containers, paper, cardboard, plastics) and food residues. These types of wastes originate from a variety of businesses, including offices, restaurants, retail stores, wholesalers. Used tires (solid, only) are collected by commercial tire haulers and taken to Acme. Toxic and hazardous wastes from industrial sources, such as the County's petroleum refineries, are accepted by Acme. Non-hazardous industrial wastes, such as food products, construction and demolition materials, and inert solids, are disposed at Acme. The public sector disposes of various types of solid wastes at Acme, including street sweepings, catchbasin debris, litter, dead animals, park and recreation area wastes, and dewatered sewage sludge. Park and recreation area wastes and dewatered sludge are the more significant types of solid wastes generated in the public sector.

There is little disposal of agricultural wastes at Acme. The largest source of agricultural wastes is stubble from field crop production, and open field burning has traditionally been the method of disposal for waste resulting from harvesting and pruning.[2,3]

1. Population and Housing

Setting

The 1980 Census showed a total population for Contra Costa County of 657,252. The total number of housing units in 1980 was 252,226. The number of

households in the County in 1980 totaled 241,805. Persons per household in 1980 averaged 1.69 for the entire county.[4] Population and household statistics for the cities and unincorporated areas in the County for 1980 are listed in the Economic Appendix.

The total population for the County increased from 1970 to 1980 by 18 percent. The percentage increase in housing units from 1970 to 1980 was significantly greater than the population change. Housing units increased by 42 percent. A breakdown of population and housing units for the cities and unincorporated area in the County for 1970 and 1980 appears in the Economic Appendix.

Contra Costa County future population estimates made by the Association of Bay Area Governments (ABAG) as part of their Projections 79.[5] County population projections for 1980-2000 are presented in Economic Appendix. These projections were made before the 1980 Census, which explains the small difference in the 1980 population estimate by ABAG with the actual count of the Census. Projections for 1980-2000 reflect a slowing of the high rates of increase that have occurred over past decades. The moderating of growth is due to expected declines in birth rates and in-migration from past levels.

Population estimates for central Contra Costa County were made as part of ABAG's Solid Waste Facilities Study in 1979.*[6] The estimates for 1975-2000 for the central County are shown in Economic Appendix. In 1980, the population of the central county was estimated to be 372,900. This number represents more than one-half of the total population in the County. The central County includes the cities of Clayton, Concord, Lafayette, Moraga, Martinez, Pleasant Hill, Walnut Creek, and portions of the unincorporated area.

The pattern of population and housing growth within the county indicates a shifting from the west to the central area of the County. The central County is increasingly attractive as a suburban community for the Bay Area. Rapid growth also occurred in the eastern communities during the 1970's and is expected to continue.

The overall trend for the County points to population growth with an increasing number of housing units, charcterized by more dense residential development, and decreasing household size.

Impacts

Alternatives A, B, C and D would have no direct impact on the County's population and housing or their projected growth in the future. Population and housing growth, however, are predicated on the existence of an infra-structure to support their growth. All existing and future development assumes the satisfactory disposal of solid wastes. Acme Fill provides this

*These estimates do not reflect 1980 census data.

necessary requirement. Alternatives A, B, C, and D would continue this support. If no environmentally sound and efficient means of disposal of solid wastes existed, a limit could be imposed on further population growth and urban development.

Mitigations

No mitigations are required.

2. Employment and Income

Setting

County employment is concentrated primarily in the services and retail trade industries. Moreover, Contra Costa County is a regional center of manufacturing activity, with petroleum refining, and chemical and allied products being the most significant. The Economic Appendix presents a breakdown of employment by industry for the 1972-1985 period. This table shows the expected continuation of the trend of employment shifting from manufacturing, construction, and transportation/public utilities industries towards service, trade, and financial industries.[7]

With this pattern of growth in service-oriented employment is the expectation of rapid growth in office space, especially in the central County. From 1971 to 1980 the number of square feet of office space in buildings 5,000 square feet and larger in the central County increased eight-fold from 534,400 to 4,495,500. While this tremendous rate of growth experienced in the 1970's is not expected to continue during the 1980's, supply will continue to increase and there should be a doubling of office space. An additional 5 million square feet of office space are proposed to be built in the central county.[8] Assuming economic recovery and favorable financing, most of the proposed office space additions should be completed in the early 1980's.

One reason for the expected rapid growth in office space and the increase in service-oriented employment is the central County growth which is increasing at a greater rate than the growth of the San Francisco/Oakland Standard Metropolitan Statistical Area (SMSA). This five-county SMSA contains the sixth largest concentration of office space in the U.S.A. In 1980 it was one of the ten fastest growing SMSA in non-agricultural employment in the U.S.A.[9] A factor contributing to the growth in central county is the shift in population and employment from San Francisco to suburban areas. For example, supporting office functions of corporations are moving to the central county from San Francisco. It is expected that this shift will accelerate during the 1980's.

A major employer is the County government. Contra Costa County employs a total of 6,500 people, of which 3,350 are estimated to be in the office category.[10] County offices are located throughout the County, with a significant concentration of approximately 1,800 office employees in Martinez. When compared to other industrial activities, agricultural activity in the

County is relatively minor. Approximately 90 percent of agricultural production occurs in the northeastern Delta area of the county. The agricultural activity in the Diablo-San Ramon area is expected to change to residential development as urban expansion continues in this rapidly growing area.[11,12]

Since 1970 the number of jobs within the county have increased faster than the general growth rate of population. The number of business establishments within the county has also experienced significant growth. These two trends are expected to continue into the future. Nevertheless, the number of county residents working outside Contra Costa County increased from 38.8 percent in 1970 to 40.4 percent of the work force in 1975. The largest outside location of employment is Alameda County; the other major employment area is San Francisco.[13,14] In the future the County will continue to be suburban, and it is expected that a greater percentage of county residents will work inside the county than has occurred during the 1970's. However, it is unknown whether commuting will increase or decrease.[18]

Currently, Acme employs an average of 21 full-time employees. Its annual payroll for 1981 averaged $434,000.

Residents of Contra Costa County are characterzed as predominantly affluent. Median household income for the county in 1970 was the fourth highest in California, while at the same time, the county had one of the lowest percentage of residents below poverty level.[15]

In 1975 the median annual household income for the overall county was estimated by the County Planning Department to be $15,026.[16] The median annual income for households in the central county was estimated to be approximately 30 percent higher: $19,650.[17]

Impacts

Alternatives A, B, C, and D would have no direct impact on the industrial, commercial and agricultural growth in the county. Economic growth in these sectors is predicated on the existence of adequate means of disposing of solid wastes generated by these sectors. Alternative D through its material recycling effort would provide an important service to businesses occupying existing offices in central county and the expected large office space additions in the near future. The recovery and recycling of high grade office papers would be beneficial.

Alternatives A, B, and C would have no direct impact on employment within the county. As stated for the impact on population and housing, existing employment and its future growth are founded on the presence of an infrastructure, which includes the disposal of solid wastes.

Alternative D would increase employment in the County by adding 33 to 63 new jobs. A multi-material recovery and recycling center with curbside collection in central county would create between 10 and 20 new jobs, most of which would be full-time. Both facilities of the waste-to-energy project proposed by Central Sanitary District would create new full-time employment: 23 employees for Title 1 and 34 employees for Title 2.

Alternatives A, B, and C would have no impact on employment at Acme Fill. Continuation of operations elsewhere on Acme's property would be handled by existing numbers of employees.

Alternative D could have an adverse impact on Acme's employment level at the disposal facility because the reduced quantities of waste could result in a corresponding reduction in landfill employment.

The impact of Alternatives A, B, C, and D on construction activity in the county is indeterminate. No estimate has been made of the construction employment that would result from the waste-to-energy facility. As yet, Central Sanitary District has not prepared an EIR for this facility.

Mitigations

No mitigations required.

3. Public Fiscal Aspects

Setting

Acme creates some demands on public services provided by the County and Special Districts. The landfill uses water from the Contra Costa County Water District (CCCWD) and has normal usage patterns.[19] Acme's major use of water is for dust taliation, to control the spreading of dust. Other uses include sprinkling of streets and roadways, drinking water, truck washing, water for showers and one toilet, and fire fighting.[20] It places minimum demand upon the CCCWD system.[21] Acme does not have sanitary sewer service from the Central Contra Costa Sanitary District.[22] In the area of public safety, the landfill places little demand on the County's Sheriff Department[23] and the Contra Costa County Consolidated Fire District. The District has noticed a decrease in the number of incidences it must respond to at the disposal site.[24]

Acme does place demands on the County government for Health Services, Public Works, the Planning Department and the Courts. Acme Fill is under the jurisdiction of the County Department of Health Services, the local enforcement agency which administers Acme's Solid Waste Facilities permit and is responsible for enforcement of health-related regulations. Acme has contributed $50,000 towards the Fiscal Year (FY) 1981-82 County enforcement program which had a total budget of $270,000.*[25]

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*All three Class II-1 landfill operators paid a total of $115,000 in FY 81-82.

In February 1982, construction of a new access road to Acme's landfill site and IT Corporation's Class I disposal site in the same area was completed. The County Public Works Department designed the industrial access road. A Community Development Block grant for $150,000, administered through the Planning Department, was used for design work.[26,27] As part of the agreement whereby Acme and IT jointly paid for construction and Shell Oil donated land, the County is to provide maintenance of the road. Assuming that the road is designed to accommodate truck traffic, the County would expect normal annual maintenance costs* of approximately $10,000 per 2-line mile.[28] The 2-lane road is approximately 5,870 feet (1.1 miles) in length[29] and would expect a maintenance cost of approximately $11,000 annually.

The quarter-mile stretch of Waterfront Road between I-680 and Industrial Access Road requires structural overlay, according the Road Maintenance Division of the Public Works Department. The Division estimates $50,000 is required to upgrade the road to withstand continuous truck traffic.[30]

No information is available on any plans to correct the flooding problem on Waterfront Road as described in Section F, Circulation and Traffic. Rectifying this problem would, however, be expensive.[31]

The Waterfront Road/I-680 interchange providing access to Industrial Access Road is maintained by the California Department of Transportation (Caltrans). Caltrans expects higher-than-normal maintenance costs on this interchange due to significant deterioration from the expected heavy truck traffic. Caltrans' plans to level and stabilize existing rough pavement may include surfacing and correction of settling at the I-680 interchange. Construction, which is estimated to cost $500,000, is expected to begin in 1983.[32] No annual maintenance costs of the interchange have been estimated.

A 72-inch sewer main extends through the 200-acre northeast part of Acme's property. As a result of the slope failure which dislocated and moved this line, Central Sanitary District has filed two lawsuits against Acme; 1) condemnation of property for the sewer main, and 2) recovery of costs to relocate and repair the line.[33]

The current assessed value of Acme's property (land, improvements, and equipment) is approximately $3,353 million. Almost two-thirds of the assessed value is for land. This assessment appears on the December 10, 1981 tax roll. The total 1981 - 82 property taxes are approximately $37,000. The average ratio of taxes to total assessed value is 1.1 percent.

Impacts

Alternatives A, B, and C would impose no significant additional demand on public services than Acme's current level.

Alternative D would have a significantly large financial impact on the County and/or Central Sanitary District. Although the impact of the material recycling effort would be relatively small, financing a $165 million (1986 dollars) waste-to-energy project (Title 2) would have significant financial impact. The fiscal demands on the County and the Central Sanitary District of constructing the waste-to-energy project have not yet been analyzed. Central Sanitary District is currently conducting a feasibility and predesign engineering study of the waste-to-energy project. The District has proposed that the County consider the possibility of implementing the Title 2 project. If the County becomes involved, the first task would be to form a lead agency to seek financing and to supervise the project construction and implementation. While an EIR or a financing plan has not been devised, it is evident that a project of this magnitude would have a significant fiscal impact on the County and the Central Sanitary District.

Alternatives A, B, and C, which would open additional land to landfill, would probably result in an increase in property taxes paid by Acme Fill. The amount of change, however, is indeterminate, since it would depend on the assessed value and on the County's re-assessment of the property. The land to be filled under Alternatives A, B, or C is currently undeveloped, raw land. When it is filled the market value should increase by some amount, since there has been an improvement to the land. At that time, the County Assessor could appraise the filled area to determine a new market value for property taxes.[34] After Acme receives permission to expand its operation, the County tax assessor may inspect the property to determine what changes have been involved. Granting of the permit per se, however, would not change the assessment value.

Alternative D would not result in any additional property taxes. The material recovery and recycling center is assumed to be operated as a non-profit agency on government-owned land. The waste-to-energy facilities would more than likely be publicly owned and would be located on Central Sanitary District property.

Mitigations

As possible mitigations to the large capital and operating costs of a waste-to-energy project, cost-savings measures and the possibility of obtaining federal and state grants should be examined by Central Sanitary District in the EIR that would likely be prepared for the project. Obtaining federal grants can be expected to require considerable expertise. On October 1, 1981, federal regulatory, grant, and technical assistance programs operated by the U. S. Environmental Protection Agency's Office of Solid Waste under subtitle D of the Resource Conservation and Recovery Act of 1976 (RCRA) were eliminated. Subtitle D is that portion of RCRA that deals exclusively with non-hazardous solid wastes.

4. Collection, Hauling and Landfill Costs

Setting

Current collection and haul costs in Acme's service area are estimated to range between $50 and $70 per ton in 1981 dollars for franchised public collectors who use the Acme landfill. These estimates are based on a 20-cubic yard garbage truck with one-way travel distance of 6 to 21 miles between the population centroid of a collection area and the landfill.[35]

Disposal costs for Acme Fill are estimated to range between $5 and $6 (1981 dollars) per ton of waste processed.[36] Comparing the sizes of the three Class II-1 landfills in Contra County, economies of scale seem to be achieved with the larger landfills having lower costs per ton of waste disposed.

Based on the collection and haul costs combined with Acme's disposal costs, total solid waste management costs in Acme's service area are estimated to range from $55 to $75 (1981 dollars) per ton.[37]

Impacts

Alternatives A, B, and C would have no direct effect on collection or hauling costs. Since the implementation of Alternatives A, B, and C would require privately funded expenditures for construction and installation of facilities and compliance permits, it can be expected that disposal costs would increase. The increased costs of landfilling would be charged to collectors and private persons disposing at the landfill. Any additional charges to collectors would more than likely be passed on to their residential and commercial customers.

The magnitude of increased disposal costs is unknown and indeterminate. Construction and other related costs of Alternatives A, B, and C would be privately incurred by Acme Fill Corporation and are not publicly available.

Comparing initial construction costs for Alternative A with the costs of other alternatives reveals that the construction costs for Alternative B will be almost as much as those for Alternative A. However, the construction costs for Alternative B would be amortized over a shorter time period (almost one-third shorter), thereby resulting in higher annual costs. Also, disposal costs on a unit basis (per ton) would be greater for Alternative B than Alternative A. With respect to Alternative C, construction costs would not be as great as Alternatives A or B. However, since the area being filled under Alternative C is smaller than the areas of Alternatives A and B, the unit costs would be much higher for Alternative C than that for Alternative A and, possibly, for Alternative B. The annual costs for Alternative C would be greater than for Alternative A.[38]

Under Alternative D collection costs would not be expected to change from current levels. However, haul costs may change related to the distances between collection areas and the location of the material recycling and recovery

center and the waste-to-energy facility when compared to current hauling distances between collection areas and Acme. The magnitude and direction of change in haul costs and the percentage change is indeterminate at the present time and would require an in-depth transit analysis.

Alternative D would reduce the amount of solid wastes being received at Acme. Those costs which vary with the amount of solid wastes received at Acme would be expected to decrease with the reduction in solid wastes; however, many costs are fixed and would not change but continue at the same level regardless of waste quantity received. Overall disposal costs would more than likely be reduced by some unknown amount.

Alternative D would involve additional costs for material recycling and a waste-to-energy facility. These costs are discussed in further detail in the next section, Other Methods of Disposal.

Mitigations

Acme and its member collector firms should be involved from the beginning and throughout the planning, construction, and operational phases of any waste-to-energy project.

5. Costs of Other Methods of Disposal

The costs of three methods of disposal other than landfilling are considered in this section: 1) waste reduction, 2) material recovery and recycling, and 3) a waste-to-energy project. General cost estimates for the comprehensive curbside collection/waste processing center are based on data collected from E.C.ology, a program established in 1972 which has operated and expanded continuously since that time.[39,40,41,42] Cost estimates for the waste-to-energy project are based on the program being proposed by Central Sanitary District.[43,44]

The three methods are components of Alternative D and are discussed further in Section J, Resource Conservation and Recovery.

Setting

Waste Reduction - A public information program to emphasize the need for people to reduce their generation of solid wastes would depend on the effort of the County, Acme, or other organizations. A relatively small program would consist of inserting waste reduction technique announcements in collector's monthly customer bills. A more extensive public awareness program could include periodic media coverage such as newspaper supplements, occasional public events, and a full- or part-time position in either the Community Services Department or Public Works Department to focus on developing and maintaining a continuous public education program to sustain interest and participation.

Material Recovery and Recycling - This component is a Multi-Material Recycling Project which consists of:

a. A Processing Center analyzed at two levels of capacity: a 50 ton per day (TPD) processing center as proposed for the central county in the Partners for Change[45] and a 77-TPD facility based on the ABAG Recycling Simulation. The processing center is assumed to be operated on a non-profit basis at the site of the current Contra Costa Community Recycling Center (CCCRC) in Pacheco.

b. Five programs based at and emanating from the Processing Center:

- curbside collection in five central County cities: Martinez, Concord, Walnut Creek, Pleasant Hill, and Clayton
- buy-back or purchase
- donations
- commercial (high-grade) office paper collection, and
- satellite operations

These programs would collect and process materials such as newspaper, aluminum, bi-metal, and glass.

A key factor in the success of a recycling operation, is high participation which requires a combination of dependable, weekly curbside collection and a buyback program which pays the public for materials such as newspaper, aluminum, bottles, and tin. At the same time, dependable market prices for recyclable materials are crucial to the economic success of a recycling program. Prices are determined by external economic events and are set in the market beyond the control of a processing center. Many markets are cyclical in nature, for example, the newspaper market, while other markets are highly competitive such as the market for high quality office paper which has experienced an influx of small, private recyclers.

Waste-to-Energy - The waste-to-energy project being considered by Central Contra Costa Sanitary District is described in Section 1, Resource Conservation and Recovery. Essentially it consists of two independent components: Title 1 and Title 2 which both use mass burning technology. Title 1 would handle 116 TPD of solid waste and incinerate 180 TPD of wet sludge. Title 2 would incinerate 884 TPD of solid wastes. At the present time, it appears that Title 2 may be implemented before Title 1. Therefore, the discussion focuses on Title 2.

Impacts

Alternatives A, B, and C would not have any impacts on other methods of disposal. The impacts for Alternative D are described here by component: waste reduction, material recovery and recycling, and waste-to-energy facility.

Waste Reduction - A relatively small program, such as announcements in customer bills or occasional distribution of simple brochures and pamphlets would cost between $20,000 and $30,000 per distribution depending on quality of materials used. Partners for Change recommended a countywide public awareness and education program budgeted at a rate of 30 cents per household per year to generate $75,000 annually. Allocation of this sum would provide for a coordinator at $25,000 and an operating budget of $50,000. It should be noted that the $75,000 was assumed to support all county recycling efforts rather than a central county waste-reduction segment only.

Material Recovery and Recycling - Construction costs related to a central County Multi-Material Recycling Project would range between $1,250 million and $8,820 million for a 50 or 77 TPD Center, respectively.

Revenues, expenses, and resulting deficits based on 50 and 77 TPD processing centers, for the total project would be approximately:

	Multi-Material Recycling Project (no cost mitigations)	
	50 TPD Center	77 TPD Center
Revenues	$ 976,000	$1,735,000
Expenses	1,782,000	2,649,000
Deficit	($ 806,000)	($ 914,000)
Deficit per Ton*	($44)	($33)

Economics of large scale appear possible with the recycling effort. The more tonnage processed, the lower the costs appear to be.

A more detailed discussion of estimated construction costs, revenues, expenses, and the methodology is provided in the Economics Appendix.

Waste-to-Energy Project - The Title 2 component, which is proposed to be implemented before Title 1, is estimated to have total project costs of $165 million 1988 dollars (mid-point construction). Financing is assumed to be 80 percent revenue bonds and 20 percent equity and to have an effective interest rate on the revenue bonds of 10.7 percent, with levelized 21 annual payments.

Annual costs (1988 dollars) in the first year of operation in 1988 are estimated to total $24.3 million.

Annual revenues (1988 dollars) consist primarily of electricity sales to PG&E and a relatively small amount of interest earnings on reserve fund and are

*Divide deficit by TPY = TPD x 7 x 52.

expected to total $18.3 million. The Public Utilities Regulatory Policies Act of 1978 (PURPA) requires utilities to purchase power from small power producers (under 870 megawatts) at a rate equal to the utilities' avoided cost if it produced the power itself. The future of this requirement is uncertain since the Janaury 1982 Federal Appeals Court decision which struck down this requirement.[46] Undoubtedly the decision will be appealed. However, with this uncertainty, it would appear that the requirement for PG&E to purchase this electricity is also questionable at this time.

Comparing the annual revenues with annual costs shows a net annual deficit of almost $6.0 million in 1988. According to Central Sanitary District, the waste-to-energy Title 2 facility would produce an annual deficit of $21.79 per ton (1988 dollars) in the first full year of operation in 1988. This loss calculates to be $21.79 per ton (1988 dollars).* A tipping fee equal to this amount per ton would be required to offset the net annual deficit; however, the inclusion of the tipping fee stabilizer in the bond issue to subsidize the gross tipping fee would in effect lower the tipping fee. This is done to keep costs of burning solid wastes competitive with costs of landfilling. The net tipping fee is the result of offsetting the gross tipping fee with the tipping fee stabilizer. For 1988 the net tipping fee would be $12.11 per ton.

The 1988 net tipping fee of $12.11 per ton is expected to be comparable to the cost of landfilling in 1988. The cost of $12.11 per ton discounted to 1982 dollars, using an annual discount rate of 10 percent, is $6.84 per ton. This amount is within the range of estimated current disposal costs (per ton) at Acme Fill and other landfills in Contra Costa County. Over the time period of Title 2 operations, it is estimated that the tipping fee would decrease and could eventually be eliminated.

The exact effect of such a tipping fee (net) on collectors delivering solid waste material as input to the facility's incinerators is unknown. Assuming that collectors pass along any additional costs, such as a tipping fee, to their customers, residential and commercial solid waste rates would increase by some unknown, but probably small, amount. The impact on disposal costs caused by diverting solid wastes to the waste-to-energy facility is also indeterminate.

Central Sanitary District states that the Title 1 project could be implemented by the District although it judges that Title 2 is beyond its financing capability. The District has proposed that the County consider the possibility of implementing the Title 2 project.

Detailed breakdowns of this discussion are presented in the Economics Appendix.

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*$6 million divided by 85% of 884 TPD x 365 = 274,261 TPY.

Mitigations

Waste Reduction - No mitigations required.

Material Recovery and Recycling - The cost mitigations are methods of cost savings and revenue-raising. Cost savings mitigations include interest-free loans, grants for collection vehicles, lower labor costs from "workfare" or other subsidy, administrative support from public agencies, lower collection vehicle driver costs, and in-kind services provided by a governmental agency. Revenue-raising mitigations include increasing the average net revenue per ton and franchise fees.

For the total Multi-Material Recycling Project, the deficit would decrease from $44 and $33 respectively for 50- and 77-TPD facilities to $20 and $14 per ton:

	Comprehensive Regional Recycling Center (with cost mitigations)	
	50 TPD Center	77 TPD Center
Revenues & Franchise Fees	$ 1,115,000	$1,874,000
Expenses	1,488,000	2,272,000
Deficit	($ 373,000)	($ 398,000)
Deficit per Ton	($20)	($14)

A detailed discussion is provided in the Economics Appendix.

Waste-to-Energy Project - In view of the recent Federal Appeals Court decision which struck down the requirement for utilities to purchase power from small generators, the District should establish and maintain close coordination with the California Public Utilities Commission and PG&E regarding the applicability of this decision and PURPA in relation to California uilities, and to monitor continuing litigation related to this issue.

With respect to the waste-to-energy facility, the inclusion of a tipping fee stabilizer in the revenue bond issue to construct the Title 2 facility would subsidize the expected annual deficit and, in effect, lower the tipping fee. This action would be intended to keep cost of burning solid wastes competitive with costs of landfilling. The net tipping fee would be the result of offsetting the gross tipping fee (annual deficit) with the tipping fee stabilizer.

For 1988, the net tipping fee would be $12.11 per ton or $6.84 expressed in 1982 dollars. This amount is close to current estimated disposal costs (per ton) at Acme and other landfills in Contra Costa County. Over the operational period of Title 2, Central Sanitary District believes that the tipping fee would decrease and would eventually be eliminated.

Footnotes

[1]Contra Costa County, Public Works Department, Final Draft: County Solid Waste Management Plan, December 1981, with revisions made January 1982.

[2]Ibid.

[3]Frank Boerger, P.E., Civil Engineer, Harding Lawson and Associates, Telephone Conversation, July 8, 1981.

[4]U.S. Department of Commerce, Bureau of the Census: 1970 and 1980 Census of Population and Housing.

[5]Association of Bay Area Governemnts (ABAG) PROJECTONS 79, April 1979.

[6]Association of Bay Area Governments, Solid Waste Facilities Study for the San Francisco Bay Area, December 1979.

[7]Private Industry Council, Contra Costa County, Industry Employment, May 1981.

[8]Coldwell Banker, "Central Contra Costa County Office Buildings on the Move," July 1981.

[9]Loc Cit.

[10]Contra Costa County, Community Services Department, Partners for Change: A Scenario for Recycling in Contra Costa, December 1980.

[11]Loc Cit.

[12]Contra Costa County, Public Works Department, Final Draft: Solid Waste Management Plan, December 1981 with revisions January 1982.

[13]Contra Costa County, Planning Department, Contra Costa County--A Profile, October 1977.

[14]U.S. Department of the Army, San Francisco District, Corps of Engineers, Alhambra Creek: Study of Alternatives, September 1980.

[15]Contra Costa County, Planning Department, Contra Costa County--A Profile, October 1977.

[16]Contra Costa County Planning Department, 1975 Special Census, Contra Costa County, 1975.

[17]Contra Costa County, Community Services Department, Partners for Change.

[18]Charles Zahn, Contra Costa County Planning Department, Response to Administrative Draft EIR/EIS Acme Landfill.

[19]Contra Costa County Water District, Gordon Tormberg, Treated Water Division, telehone conversation 25 February 1982.

[20]Frank Boerger.

[21]Gordon Tormberg, Treated Water Division, Contra Costa County Water District, telephone, 25 February 1982.

[22]Central Contra Costa Sanitary District, Jay McCoy, Manager, Collection System Engineering and Services Division, Telephone conversation 4 March 1982.

[23]Contra Costa County, Office of Field Service, Sheriff-Coroner, Warren E. Rupf, Assistant Sheriff, Meeting, 23 February 1982.

[24]Contra Costa County Consolidated Fire District, Gerald Duarte, Assistant Chief, telephone conversation 25 February 1982.

[25]Contra Costa County, Department of Health Services, William B. Treadwell, Supervising Environmental Health Inspector, meeting 23 February 1982.

[26]Dave Okita, Environmental Control, Public Works Department, Contra Costa County, telephone conversation, July 7, 1982.

[27]Charles Zahn, Planning Department, Contra Costa County, telephone conversation, July 8, 1982.

[28]Contra Costa County, Public Works Department, Road Maintenance Division, Maurice Shiu, Assistant Maintenance Engineer, Meeting, 23 February 1982.

[29]Contra Costa County, Draft EIR, Industrial Acces sRaod (CP 79-70), January 1980.

[30]Maurice Shiu 22 February 1982.

[31]California Department of Transportation, Herb Smitton, Superintendent, Maintenance Station, Walnut Creek, telephone 26 February 1982.

[32]Herb Smitten, 26 February 1982.

[33]Jay McCoy, Telephone 4 March 1982.

[34]Yosh Nakano, Supervising Appraiser, Assessor's Office, Contra Costa County, meeting, 23 February 1982.

[35]Based on Contra Costa County, Solid Waste Management Plan, 12/81 and Metcalf & Eddy Engineers, Contra Costa County Solid Waste Management Plan, December 1975.

[36]Loc. Cit.

[37]Loc. Cit.

[38]Frank Boerger, telephone conversation, 19 July 1982.

[39]City of El Cerrito, Community Services Department, E.C.ology Recycling Center, Joel C. Witherell, Director, Meeting 3 March 1982 and Telephone conversation 17 March 1982, Trish McConnell, Rehabilitation Counselor, meeting 3 March, and Janice Wesioly, Plant Manager, meeting 3 March 1982.

[40]Contra Costa County, Public Works Department, Staff Report, "Curbside Collection in Central County", March 1982.

[41]City of El Cerrito, Communities Service Department, Planning Report: West Contra Costa County Regional Recycling Program, November 1981.

[42]Contra Costa County, Community Services Department, Partners for Change.

[43]Contra Costa County, Public Works Department, "Interoffice Memorandum on Central Conta Costa Sanitary District Waste-to-Energy Project," March 1982.

[44]Wegman/Carollo, Predesign Engineering for Solid Waste-to-Energy Project Draft Final Report, vols. I, II, III, IV and V, (Central Contra Costa Sanitary District), February 1982.

[45]Contra Costa County, Community Services Department, Partners for Change.

[46]Dr. Alfred B. Scarmamelli, P.E., "Energy Market Key to Project Planning," Solid Wastes Mangement, Vol. 25, No. 4 (April 1982) pp. 16-17.

L. CULTURAL RESOURCES

Setting

The Acme property is located in an area which was probably an area of intense resource procurement activities and possible seasonal occupation by native peoples of the San Francisco Bay Area. One previously recorded archaeological site is situated one quarter mile from the project site at the base of a highland formerly bordered by marshes. Therefore, the upland portions of the Acme property are considered highly sensitive by the Northwest Information Center, California Archaeological Site Inventory. At this time, no prehistoric or historic cultural resources have been identified on the Acme site.

Impacts

Alternatives A and B are situated on lands which have low archaeological sensitivity because of their status as formerly tidal marshlands. Archaeological field surveys would not be required for either of these alternatives, based on the findings presented in a letter from the California Archaeological site inventory dated 30 July 1981.

Alternative C proposes landfill on upland portions of the site in the southern 178 acres. This area may be considered highly sensitive and may contain archaeological materials such as obsidian, chert flakes, milling equipment, marine or freshwater shells, bones, locally darkened soil and human graves, or historic materials such as foundations, refuse deposits, backfield wells, square nails or sun-tinted glass. The Northwest Information Center recommends that a qualified archaeologist conduct a site survey in this area.

A specific site for Alternative D has not been selected. Therefore, impacts on cultural resources cannot be identified for this alternative.

Mitigations

For Alternatives A, B, and D, a qualified archaeologist should be consulted if any archaeological materials are encountered during development phases of the project.

The Northwest Information Center recommends that a qualified archaeologist conduct a mixed strategy archaeological survey of the area proposed in Alternative C prior to any development phasing. Archaeological resources which may be situated within this area should be identified and recommendations should be offered for their protection and preservation.

M. AESTHETICS

Setting

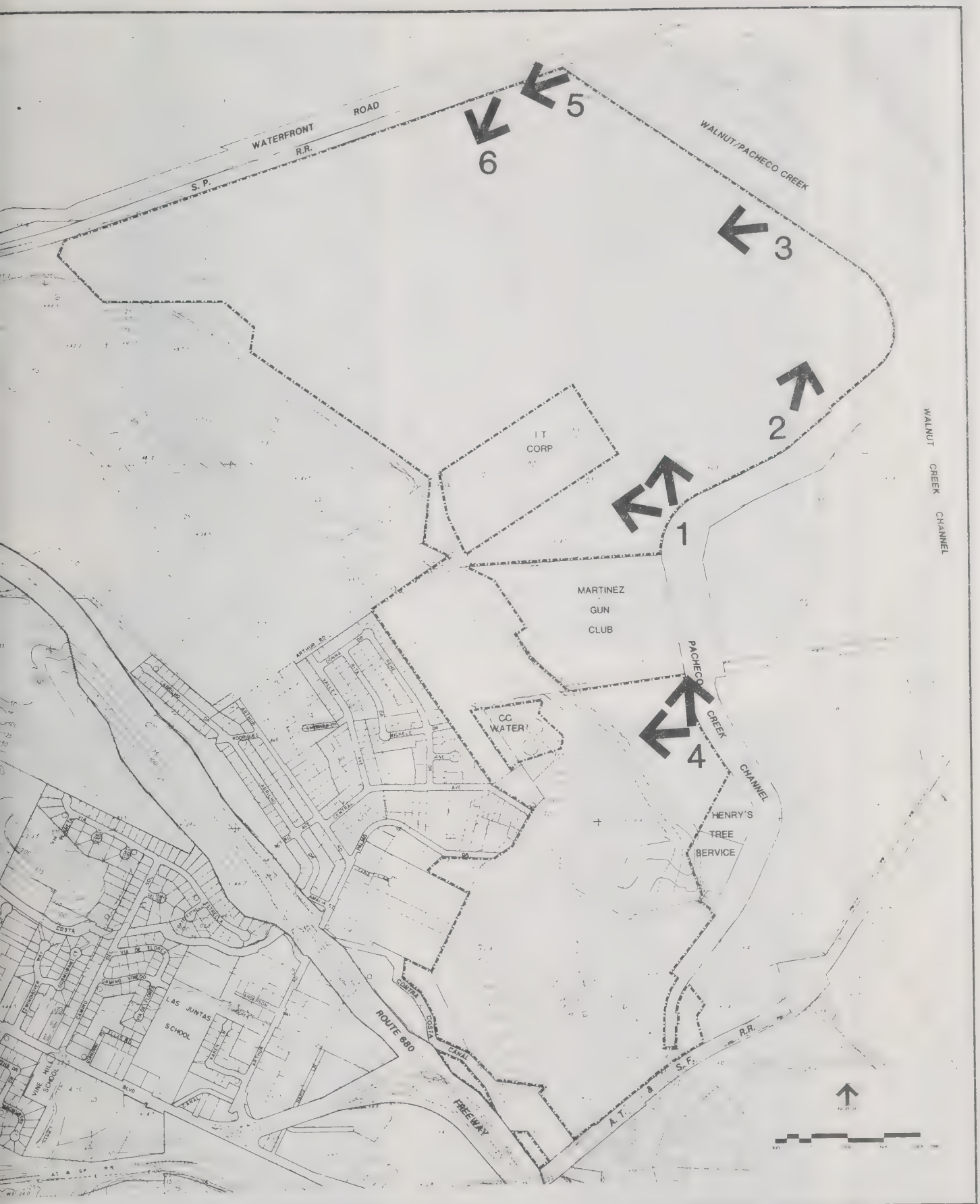
The primary views into the existing landfill are from Waterfront Road which is designated as a scenic route in the Contra Costa County General Plan. Exhibit N1. Views into the site from Waterfront Road at the northeast corner of the site are shown in Exhibit N2. Landfill operations are visible from the roadway although they are at a considerable distance and are located above the roadway elevation. The earth-covered portion of the landfill appears as an unvegetated hill, and the topography is consistent with the existing hills and flatlands in the immediate area. The proposed expansion area (Alternative A) is seasonally flooded in some areas and densely covered with low vegetation at the higher elevations. There are uninterrupted views from Waterfront Road looking south as far as Mount Diablo.

The remainder of the Acme property is almost completely screened from any view along a public roadway. One notable exception is the view into the southwest corner of the property from Interstate 680. (Exhibit N3) The relatively small opening between the hills permits a brief glimpse into the property for passing motorists. The hilly terrain screens nearly all views from the Vine Hill neighborhoods into the existing landfill operations and the proposed area.

The current Acme landfill operation controls wind blown litter by the use of portable screeens placed around the site where disposal operations occur, hand collection by Acme personnel, and stored cover material berms which catch flying litter. Peripheral site fencing also catches blowing litter.

The proposed expansion area (Alternative A) presently has some debris which has blown from the existing landfill operations, but windblown litter is not a major problem. The strong winds during the dry season tend to blow plastic and paper in a south easterly direction, and the screens to catch debris are often not adequate to confine all debris to the site. This is considered an ever-present problem which cannot be confined entirely to the site.

The current dry season landfill (22 acres) is within 2000 feet of the East Vine Hill neighborhood. The hill located between this landfill operation and the neighborhood serves as both a visual and acoustic buffer. According to the county land use permit (LUP) for this site, Acme has the responsibility for submitting a plan to the Board of Supervisors which would provide for continued buffering between the two land uses. Acme's current plans are to confine all landfill activities to the eastern portion of the hill which separates the two land uses and to preserve the ridgeline of that hill. The eastern portion of that hill would also serve as a borrow area for cover material. The LUP also requires that Acme erect a fence with wood slats around the site to prevent paper and refuse from blowing onto adjacent property.



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Location of Views

EXHIBIT
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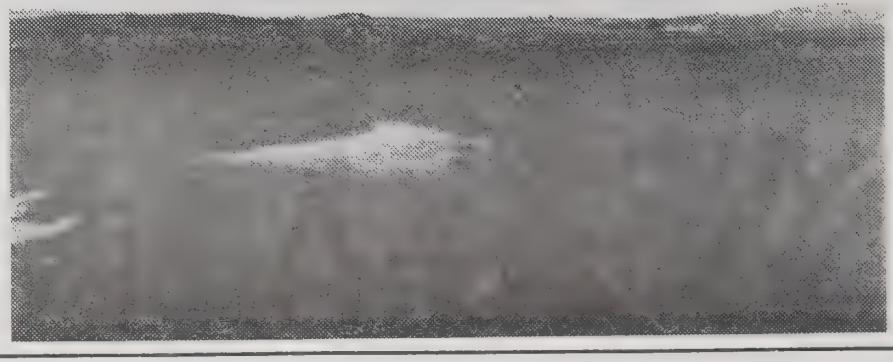

TORREY & TORREY INC. 2T environmental/urban planning and design	Views at the Site	EXHIBIT N2

4

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6

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Views at the Site

EXHIBIT N3

Impacts

The aesthetic impacts of Alternatives A and B would be confined to the short-term unsightly landfill operations viewed from Waterfront Road. This temporary impact would be eliminated when sufficient cover material had been placed on the site to support new vegetation. The views in the area for both of these alternatives would be changed to one of more rolling hills rather than flat, open space. Distance views to the south from Waterfront Road may be eliminated depending on the height and configuration of the landfill. The formation of smooth contours on the landfill would be consistent with the rolling hills visible in the distance.

For Alternative C, the same impact of short-term unsightly landfill operations applies to a small portion of I-680 freeway. Because of the relatively small viewing space, the high speed of traffic along the freeway, and the short-duration (less than 3 years), this impact is not considered significant.

With continued landfill operations in Alternatives A, B, or C, windblown litter would continue to be a cumulative problem.

Use of the proposed borrow area for Alternatives A, B or C may result in the need for a landscape screen along the access road west of the Martinez Gun Club. Such a buffer would reduce noise, dust and views of trucking operations from the East Vine Hill neighborhood.

Alternative D would reduce litter at the disposal site since less solid waste would be landfilled. However, there is high potential for uncontrolled litter where recyclables are collected curbside and at the processing center.

Mitigations

For Alternatives A, B and C, a closure plan should be designed which would provide a detailed description of how the closed landfill areas would be contoured and revegetated. Smooth contours and re-vegetation with the same grass species that exist on the adjacent hills should be key elements of the plan if the area is to be preserved as open space. The contour requirements of other land uses which may be possible after closure should also be discussed in the plan.

To reduce the impacts of windblown debris, additional movable screens should be placed downwind of the proposed operation area. Screens should be cleared of debris daily and moved as necessary to confine windblown refuse to the site.

To reduce the adverse visual impacts of the landfill along Waterfront Road (Alternatives A and B), a landscape screen should be planted between the railroad tracks and the proposed landfill operations.

For Altenrative C, a landscape screen should be planted between the Contra Costa Canal and the landfill operations on the southern parcel to reduce adverse visual impacts from northbound I-680.

For Alternative D, newspapers should be tightly bound and office paper should be boxed, covered or otherwise securely contained before being deposited at collection points. Frequent, regular, and dependable pick-up is also necessary so that paper waiting for collection does not remain uncollected for extended periods subject to the effects of weather, vandalism, or theft. At a processing center, good housekeeping practices should be conducted so that litter is not a problem. The current operations at the CCCRC is an excellent example of a particularly neat operation.

N. RECREATION

Setting

Contra Costa County has designated Waterfront Road for development of a primary bicycle path. The Interim Bicycle Paths Plan states that primary bicycle paths connect residential neighborhoods and major destinations of bicycle traffic. Ultimately, these paths are expected to be developed as pathways which are physically separated from other trails or from vehicular traffic.

All of the Acme land holdings are located within an "Urban Growth Area" as shown on the Open Space/Conservation Element of the Contra Costa County General Plan. No hiking trails have been planned in the area, and the entire site is zoned for heavy industry. (See Land Use Section.)

Impacts

None of the alternatives (A through D) would have significant adverse impacts on the primary bicycle path proposed for Waterfront Road. Short-term adverse impacts may occur due to objectionable odors and unsightly landfill operations for Alternatives A and B. However, after site closure and revegetation, these impacts would be eliminated.

Mitigations

The closure plan for Acme should incorporate a bike path to reduce conflicts between vehicles and bicycles on Waterfront Road. Other recreational uses (such as a major park, golf course or relocating the adjacent gun club) should be explored in the closure plan. Efforts should be made to provide connecting trails with routes planned by the East Bay Regional Park District.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E

A. SELECTION OF POTENTIAL AREAS

Future landfill capacity requirements in Contra Costa County will depend upon population growth and the level of resource recovery operations. Assuming the gradual advent of recovery operations (as described in Alternative D), about 680 acre-feet of waste materials must be disposed annually. A new site should have a minimum life expectancy of 10 years (capable of providing for 6800 acre-feet of waste.) With an average fill height of 40 feet, about 170 acres would be required for the fill alone. Additional acreage must be provided for excavating cover material and buffering. Therefore, a new site would have to be 200 to 500 acres in size as a minimum, depending upon various other factors.

Contra Costa County has conducted several surveys in an effort to identify potential sanitary landfill sites. The most recent survey focused upon potential landfill sites in the eastern portion of the county which could be used to service both the east county and the central county when the present landfill sites reach capacity. This survey evaluated specific sites in an effort to determine general suitability for landfill operations.

For Alternative E in this EIR/EIS, Contra Costa County in conjunction with the Corps of Engineers decided to use an area approach. Four areas in the county with potential for sanitary landfill use were identified. Exhibit D4. Each of these areas contains two or more sites identified in previous studies. Although these areas do not contain all previously identified sites, they do reflect the areas where the highest concentrations of sites have been identified. The areas were also selected because of their locations on the periphery of substantial residential development and good accessibility via the existing major road system.

A fifth area of study is the Altamont Landfill in Alameda County. It was chosen for evaluation because of its large capacity (1600 acres) and high potential for fitting into a possible future system.

Each identified area has characteristics which may be considered beneficial to development of a landfill site.

Evaluation must necessarily be general due to the large areas involved. The diameter of each area is the same, about five miles, which facilitates comparisons. A brief outline of characteristics for each area is given on the following pages.

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South Central Area

EXHIB
01

1. South Central Area

Topography: Low rolling hills; elevation range 500-1000 feet; predominant slopes of 0-30%; numerous landslides in steep areas; two prominant alluvial valleys along Alamo and Tassajara Creeks

Present Land Use: Undeveloped, primarily grazing

Primary General Plan Designations: Agricultural Preserve; Open Space; Public/Semi-public

Primary Access Roads: Tassajara Road; Dougherty road; Lawrence Road

Nearest Freeway Interchanges: I-580/Tassajara; I-680/Alcosta; I-680/Sycamore Valley

Geologic Faults: None

Soil Characteristics: Predominantly clay soils; 13 types; generally slow permeability; mod to high shrink-swell; mod-well to well drained; depth to bedrock 1 to greater than 5 feet.

2. North Central Area

Topography: Three distinctive land forms: 1) Terrace and marshlands along Suisun Bay; 2) moderate to steep (9-30%) hills with incised canyons; 3) flat stream valley along Mt. Diablo Creek

Present Land Uses: Concord Naval Weapons Station; some industrial and residential; Port Chicago Military Reservation

Primary General Plan Designations: Open Space; Public-Semi Public; Residential; Industrial

Primary Access Roads: State Highway 4; Willow Pass Road; Port Chicago Highway

Nearest Freeway Interchanges: Highway 4/Willow Pass; Highway 4/Port Chicago

Geologic Faults: Clayton Fault (unknown activity)

Soil Characteristics: Predominantly clay soils; 11 major types; well drained; moderate shrink-swell potential; depth to bedrock 1 to greater than 5 feet; possible liquefaction potential along Suisun Bay; moderate landslide potential.

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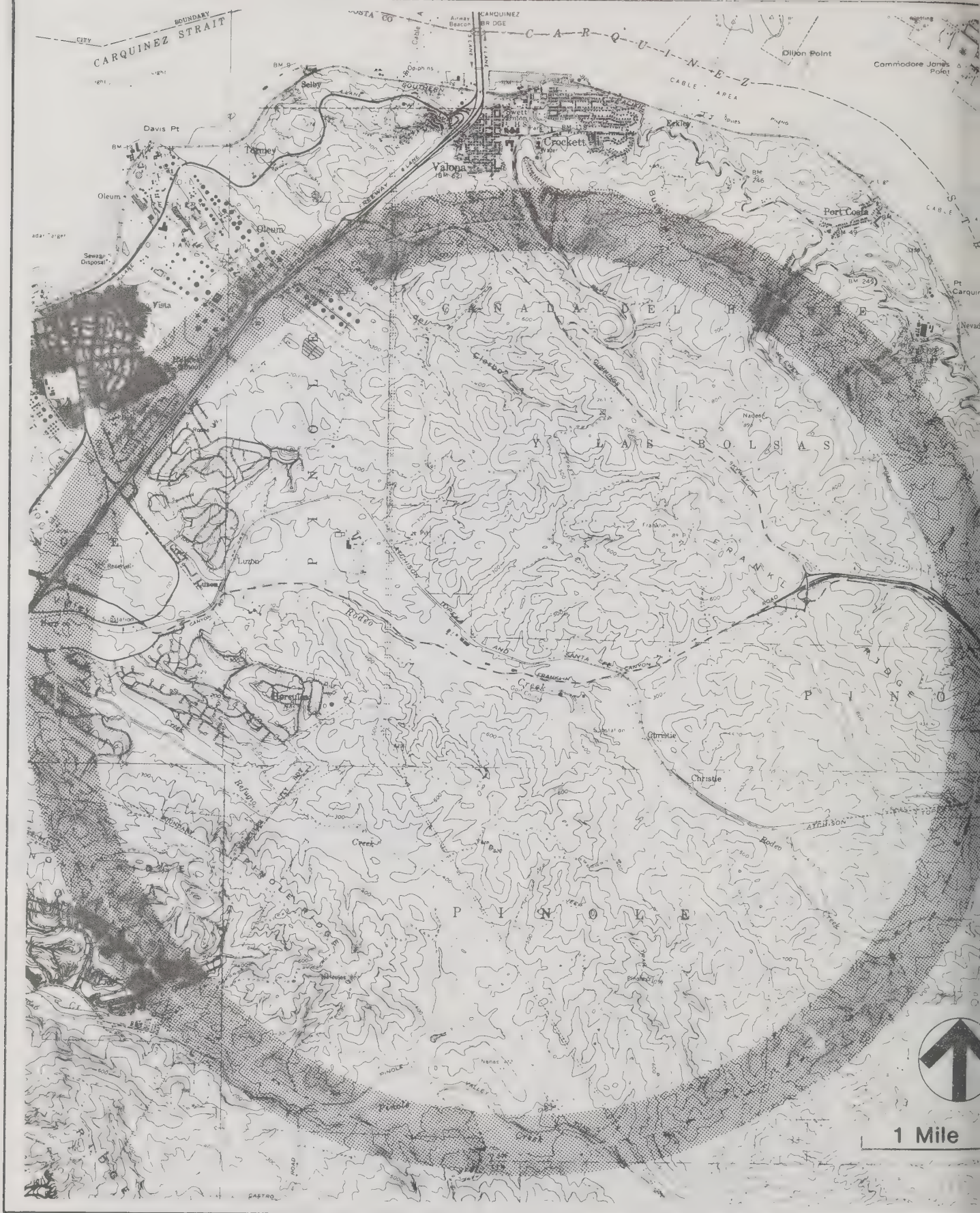
North Central Area

EXHIBI
02



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Northwest Area

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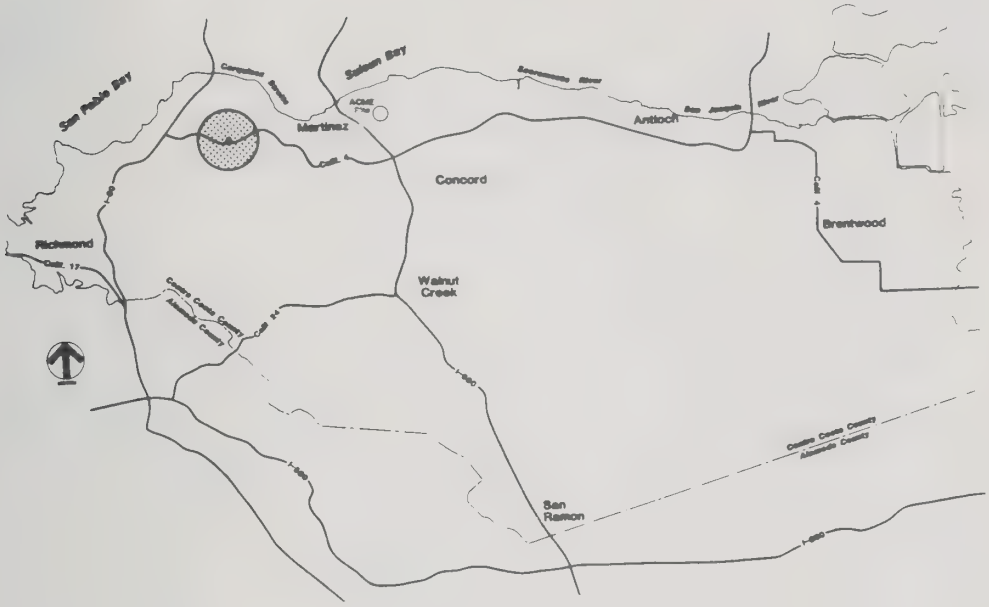
03



3. Northwest Area

Topography: Moderate to steep terrain; elevation range 200-800 feet; deeply incised stream valleys with narrow valley floors; Franklin Canyon (Rodeo Creek) is widest (1/2 mile) valley

Present Land Uses: Primarily undeveloped; some residential in northwest corner

Primary General Plan Designations: Open space; industrial; residential; city limits of Hercules

Primary Access Roads: Pinole Valley Road; Franklin Canyon Road (State Highway 4); Cummings Skyway

Nearest Freeway Interchanges: I-80/John Muir Parkway; John Muir Parkway/Cummings Skyway

Geologic Faults: Franklin Fault

Soil Characteristics: Predominantly clay soils; 10 major types; well to mod-well drained; mod to slow permeability; depth to bedrock 1-1/2 to greater than 5 feet

4. Southeast Area

Topography: Northeast portion (about 1/3 of the area) nearly flat but rising from teh east to the west; southwest portion (about 2/3 of the area) of low rolling hills dissected by small streams; flat valleys up to 1/2 mile wide along marsh and Kellogg Creeks; elevation range 50-900 feet

Present Land Uses: Primarily undeveloped; agricultural uses in northeast portion; grazing in southwest hills; Marsh Creek Reservoir

Primary General Plan Designations: Agricultural Core; Agricultural Reserve; Open Space; Public and Semi-public

Primary Access Roads: Marsh Creek Road; Vasco Road; Camino Diablo; Byron Highway

Nearest Freeway Interchanges: I-580/Vasco; Highway 4/Hillcrest

Geologic Faults: Antioch Fault; Midland Fault

Soil Characteristics: Predominantly clay soils; 10 major types; well-drained; generally slow permeability; depth to bedrock 0 to greater than 5 feet.

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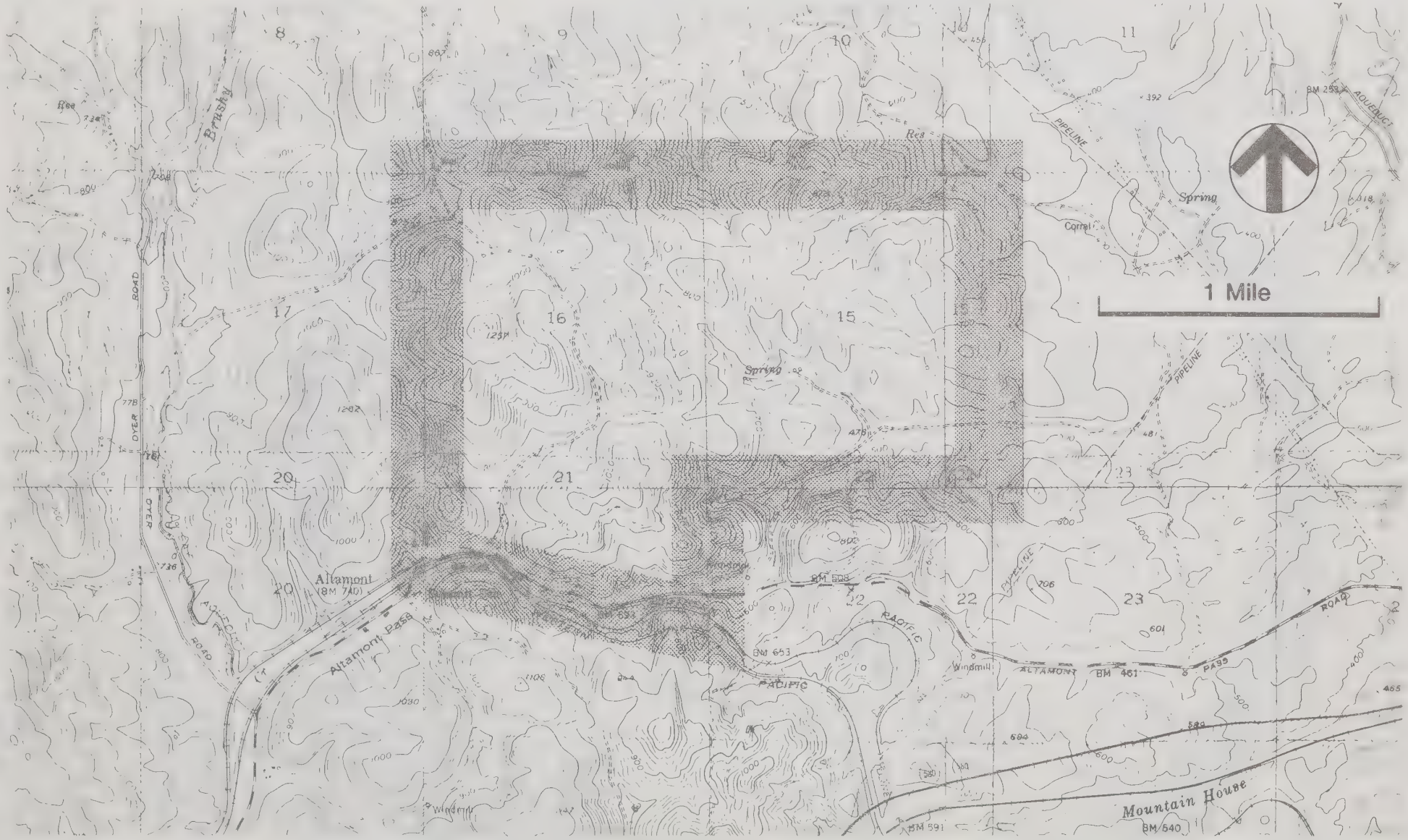
Southeast Area

EXHIBIT
04



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Altamont Landfill

EXHIBIT

5. Altamont Landfill

Topography: Moderate to steep rolling hills with narrow valleys; 1600 acres; elevation range 500 - 1260 feet.

Present Land Uses: Active landfill site; agricultural grazing on undeveloped portions

Primary Access Roads: Altamont Pass Road; Dyer Road

Nearest Freeway Interchanges: Altamont Pass/I-580

Geologic Faults: Greenville Fault (2 miles west of site)

Soil Characteristics: Altamont and Pescadero clays.
Altamont Clay: well-drained; slowly permeable high shrink-swell potential; depth to bedrock 1-1/2 to 4 feet
Pescadero: imperfectly drained; very slowly permeable; high shrink-swell potential; depth to bedrock greater than 6 feet

C. CRITERIA FOR EVALUATING SUITABILITY OF AREAS

Basic criteria for evaluating potential disposal sites were developed in a county report, "Geotechnical Services for the Contra Costa County Solid Waste Management Plan" prepared by Cooper and Clark Consulting Engineers in 1975. These basic criteria have been expanded and modified to establish a means whereby the five areas selected by the county may be evaluated and a relative comparison of suitability can be made.

The following categories provide an outline of the criteria used in this evaluation. A discussion of the constraints imposed within each area follows each category, and a relative ranking of suitability summarizes how well each area meets the established criteria.

1. Land Use Relationships

Criteria

- Avoids conflicts with surrounding land uses and other agency jurisdictions
- Avoids areas near intensive residential development
- Avoids conflicts with future land uses set forth in the Contra Costa County General Plan
- Avoids prime agricultural lands

Discussion

Most of the stated land use criteria were used as the basis for selecting the alternative areas. Therefore, all of the areas have locations which satisfy the stated criteria. However, some areas have extensive land use constraints in terms of the total acreage available for a new landfill.

The north central area has extensive acreage under jurisdiction of the U. S. Navy (U. S. Naval Magazine Concord within the city limits of Concord, and U. S. Naval Magazine Port Chicago). At this time, it is assumed that these areas would not be feasible for a landfill operation. A portion of this area is within the city limits of Pittsburg and also includes the residential areas of West Pittsburg.

The southeast area has considerable land designated as agricultural core and agriculture-residential in the General Plan. Both of these designations would place constraints on a potential landfill site. The ag-core designation would probably have more constraints due to the presence of prime agricultural soils. The community of Byron located within the southeast area would also place constraints on landfill locations.

The south central area is relatively near some residential areas of San Ramon, and the majority of the area is under agricultural preserve contracts with the county. Portions are under ownership of the Army.

A constraint within the northwest area is the inclusion of land presently within the city limits of Hercules which includes a residential area.

The Altamont site would have the fewest land use constraints by virtue of its existing operations.

All of the areas have designated open space (General Plan) which could be used for siting a landfill.

Given these land use constraints, the relative ranking of the five areas in terms of available acreage is as follows:

Least Constraints				Most Constraints
Altamont	Northwest	Southeast	South Central	North Central

2. Traffic, Hauling Distance, Transfer Stations

Criteria

- Located near Service Area to limit direct hauling costs
- Avoids problem access: residential neighborhoods, steep grades, twisting narrow roads, congested traffic areas
- Requires transfer stations to reduce hauling costs

Discussion

The north central and south central areas are both located within the present central county service area and would, therefore, be favored in terms of limiting direct haul costs. The southeast area and Altamont site are considerably outside the service area and would both require that a transfer station be constructed preferably within the central county. The northwest area has an intermediate location just outside the service area, but has access problems due to topography constraints and rapidly expanding residential areas. The south central and southeast areas have access problems because of passage through neighborhoods and distance to freeway interchanges respectively. Access to the northwest, south central and southeast areas would be limited by the existing narrow 2-lane roads. These areas would also have a relatively high potential for spills enroute to a site.

Given these constraints the relative ranking of the five areas is as follows:

Least Constraints				Most Constraints
North Central	Altamont	Northwest	South Central	Southeast

3. Regulatory and Policy Concerns

Criteria

- Requirements and considerations for Class II-1 landfill classification
- Avoids areas within 10,000 feet of airport runways for turbojet aircraft, or 5,000 feet for piston aircraft

Discussion

The permit requirements for a Class II-1 landfill in any of the four areas within Contra Costa County would be the same as those for Acme. See Section I.D. Regulatory Permit Requirements. An exception would be the Army Corps of Engineers permit because only the north central area has areas (along Suisun Bay) under Corps jurisdiction which are not covered by a nationwide permit. In addition, the north central site may require a permit from the U. S. Navy for either access or site approval. The south central area may require authorization from the Army because of lands in their ownership. The southeast area is within the jurisdiction of the Central Valley Regional Water Quality Control Board which would issue waste discharge requirements. All other areas are within the jurisdiction of the San Francisco Regional Water Quality Control Board.

Although the Altamont Landfill site is permitted and operational as a Class II-1 disposal facility, exporting Groups 2 and 3 waste from Acme's service area to Altamont would require some amendments and revisions to planning documents and permits. These include:

- Alameda County Solid Waste Management Plan

  The Alameda County Solid Waste Management Plan consists of two parts; Objectives and Policies (Chapter 3) and a Facilities Program (Chapter 4). The Alameda County Solid Waste Management Authority, a Joint Powers Agency, would have to amend the Facilities Program and the amendment would require approval by the State Solid Waste Management Board. Further, it would be necessary to determine if importation of solid waste from Contra Costa County conforms with the objectives and policies. If a policy requires amendment it must be approved by cities with a majority of Alameda County population.

- Solid Waste Facilities Permit

  The Solid Waste Facilities Permit issued by Alameda County Health Care Services would have to be amended. This amendment would require approval by the State Solid Waste Management Board.

- Conditional Land Use Permit

  The Alameda County Planning staff would determine whether a revision to the Conditional Land Use Permit would be required. If

revision is required it would need approval of the Alameda County Planning Commission.

- Environmental Impact Report

  As part of the permit process, an environmental impact report was prepared by the Alameda County Planning Department for the Altamont Landfill. The Planning Department staff would determine whether an EIR or Negative Declaration would be required for importation of solid waste from Contra Costa County.

- Waste Discharge Requirements Order

  Additional Groups 2 and 3 wastes diverted to Altamont would not require a change in the current waste discharge requirements order.

- Authority to Construct/Permit to Operate

  Bay Area Air Quality Management District

  On the basis of the provisions and conditions of the current permits issued for the Altamont Landfill by the BAAQMD, modifications would not be required by the District for disposal of solid wastes from Contra Costa County.

In order for the Altamont Landfill to accept the Group 1 wastes that Acme currently disposes on its 125-acre site, the following documents would be reviewed by the appropriate agency:

- Identification Number

  Environmental Protection Agency

- Interim Status Document

  State Department of Health Services

- Waste Discharge Requirement Order

  Central Valley Regional Water Quality Control Board

The Federal Aviation Administration Order 5200.5 prohibits new sanitary landfills within specified distances of airports to avoid hazards to planes by birds that might be attracted to a potential source of forage. In effect, these regulations prohibit a disposal facility within 10,000 feet of any airport runway used by turbojet aircraft or within 5,000 feet of any airport runway used by only piston type aircraft.

On the basis of the FAA regulation, it appears that the North Central area may fall, at least partially, within the FAA's distance limits from Buchanan Field in Concord. A better determination could be made when a specific site is selected within that area.

The relative ranking of the five sites is as follows:

Least Constraints			Most Constraints
Altamont	Southeast Northwest	South Central	North Central

4. Public Health and Safety

Criteria

- Minimizes potential for hazards from explosive gases
- Minimizes fire hazard potential
- Accessible to fire-fighting facilities and personnel
- Minimizes attraction for and generation of vectors
- Minimizes hazards associated with land disposal of Group 1 wastes on a Class II-1 site

Discussion

All areas would rank equally in terms of potential for on-site gas hazards and off-site gas migration.

The estimated number of days per year of critical fire weather are shown in the Contra Costa County General Plan Safety Element. As noted in the Safety Element, fire hazard is increased by atmospheric humidity, slope steepness, vegetation type, exposure to solar radiation, wind speed and direction, accessibility to human activities, and accessibility to fire-fighting equipment. Critical fire days are rated on a scale of I, II, and III with Class III being the most hazardous. Of the 4 study areas shown in Contra Costa County, the southeast area lies within the Class III district: 9.5 or more days of critical fire weather per year. The other 3 Contra Costa County sites are within area designated as Class II: 1 to 9.5 critical fire weather days per year. In addition, the Contra Costa County Consolidated Fire District has noted the fire problem of vegetation in the Northwest, the South Central and Southeast study areas. In terms of Critical Fire Days, the most critical area is the southeast study area. The Northwest and South Central would be ranked as slightly less

critical. While the North Central area is within the Class II designation, it would be ranked slightly less critical than the other 3 areas on the basis of discussions with the Fire District. The number of critical fire days at Altamont is unknown.

Of the 4 study areas within Contra Costa County, only the North Central area has water mains and hydrants. In the Northwest study area, mains and hydrants may be available in only that part of the area which lies within the City of Pinole. No mains and hydrants are available in the South Central and Southeast areas. Therefore, while the Northwest area might include some water lines, it would rely generally on wells and water trucked to the site while the South Central and Southeast areas would rely entirely on wells and imported water.

At the time Altamont was developed, a 4-inch water line was installed from the South Bay Aqueduct. Water is lifted more than 700 feet to a reservoir at the site. The capacity of this reservoir is 5 to 6 truckloads with each truck holding approximately 3800 gallons. Trucks are filled by gravity flow from the reservoir. A water truck used for dust control has outlets for water hoses for fire-fighting. This truck and fire trucks are always available.

In respect to water availability, the North Central area would have the least constraint. Altamont, with its specially designed and constructed water system which has served the site for almost 2 years, could rank virtually equally to the North Central area.

The availability of suitable soil for fire-fighting is unknown at all 4 Contra Costa areas. Soil is available at Altamont.

All of the study areas lie with the jurisdiction of at least two fire services jurisdictions. The actual jurisdiction would have to be determined at the time any site location was selected.

With the exception of the North Central study area and the Altamont site, all other study areas have at least one fire agency that is a volunteer operation. The Southeast area lies within the jurisdictions of the Byron and Brentwood Fire Protection Districts. Both districts are primarily volunteer operations. Under Mutual Aid Agreements, it is possible that the California State Division of Forestry, which operates a fire station on Marsh Creek Road near the study area, would respond to a fire, if requested. Of the three responsible agencies in the South Central area, two are volunteer operations. One of the 4 jursidictions in the Northwest area is volunteer-based.

According to the Safety Element, "City fire services and fire districts are prepared to extinguish...wildfire. All have tanker trucks to be used in areas which do not have a municipal water supply, and districts which include large rural or undeveloped areas also have 4-wheel drive trucks for negotiating steep roads and fire trails." Mutual aid agreements have been signed by all jurisdictions in the County.

The North Central study area would have the fewest constraints on the basis of existing fire protection services and locations of full-time staff. Altamont would rank about equally as the site is currently in operation with its own reservoir connected to an aqueduct. Third ranked would be the Northwest study area. The areas with the most constraints would be the South Central and the Southeast study areas, approximately equal, on the basis of the predominantly volunteer basis of their fire protection services.

All 5 areas would rank equally with respect to vector attraction and generation.

All 5 areas would rank equally at this stage of evaluation in terms of potential for hazards from Group 1 wastes.

The relative ranking of the five areas with respect to public health and safety is as follows:

Least Constraints	Most Constraints
North Central	Northwest
Altamont	South Central
	Southeast

5. Topography and Soils

Criteria

- Avoid areas with greater than 15% slope
- Avoid areas with high potential for soil loss
- Avoid areas with high potential for landslides or slope failures

Discussion

Land considered to be suitable for disposal areas should generally have slopes of 15 percent or less. Lands inside an alternate area with slopes greater than 15 percent were generally eliminated from future consideration.

With extensive lands comprised of steep slopes greater than 15 percent, the Northwest and Altamont areas were given lower rankings. The North Central, South Central and Southeast areas also have lands with slopes of 15 percent or greater but they contain enough land of suitable topography to be given better ratings.

Areas with adverse topography may be used for landfill operation, but would require additional site preparation and are given lower rankings.

Areas of expansive soils are not considerred to adversely affect landfill operations. Areas with high liquefaction potential and compressible soils will

require additional engineering studies and site preparation to mitigate these potential problems, but they can be used for disposal sites. Areas with high potential for landslides and slope failures are generally considered to be unsuitable for disposal sites without major modifications.

The Northwest area was ranked lower due to extensive landslide and mudflow potential. Parts of the North Central area were downgraded because of the presence of compressible and liquefiable soils. The South Central, Southeast and Altamont areas will not be adversely affected by soil and foundation conditions.

Potential erosion impacts at the five alternative sites may be determined using the universal soil equation. The equation evaluates potential soil loss in terms of rainfall energy, soil erodibility, length and steepness of slope, and control measures in use. In applying the model, the Northwest site was considered in the Los Osos-Millsholm-Los Gatos soil association while the other four sites were located in the Altamont-Diablo-Fontana association. A standard slope length of 100 feet and a slope steepness of 3:1 (three feet horizontally to one foot vertically, equivalent to an angle of 18 degrees above level) were used at all sites. The potential amount of soil lost to erosion per year both during landfill operation and after closure with a covering of annual grasses is given below. An annual loss of 5.0 tons per acre is considered tolerable in agriculture.

Potential Soil Loss
(tons/acre/year)

		During Operation	After Closure
1.	Northwest	24.6	4.1
2.	North Central	16.2	2.7
3.	South Central	34.2	5.7
4.	Southeast	21.6	3.6
5.	Altamont	22.8	3.8

Given these topography and soil constraints, the relative ranking of the five sites is as follows:

Least Constraints				Most Constraints
South Central	Southeast	North Central	Altamont	Northwest

6. Geology and Seismicity

Criteria

- Avoids areas of fracture zones, rock outcrops, old mine shafts and close proximity to active or potentially active faults

Discussion

All areas would be submitted to the same relative degree of ground shaking potential. Lands underlain by active or potentially active faults may be subject to ground rupture and are generally considered less suitable for landfill operations. These areas could be used for landfill operations, but would require additional geologic investigation to determine the risk factor to the facility. Lands subject to tsunamis, seiches or inundation from dam or levee failures were considered to have more constraints.

The Northwest, North Central and Southeast areas have lands underlain by potentially active faults and are subsequently rated negative. Also, the North Central area has limited lands subject to tsunamis and seiches along with a small zone that may be inundated from the failure of Mallard Reservoir. This, too, is considered to be a site constraint.

Given these geology and seismicity constraints, the relative ranking of the five sites is as follows:

Least Constraints		Most Constraints
Altamont	South Central	North Central Northwest Southeast

7. Groundwater and Surface Water

Criteria

- Avoid areas with high surface runoff
- Avoid areas with high leachate generation potential
- Avoid areas within watersheds of reservoirs, or sensitive areas of San Pablo Bay
- Avoid areas subject to the 100-year flood

Discussion

Potential surface water impacts associated with sanitary landfill operations can be related to the amount of runoff produced in an area. The more runoff an area experiences, the higher the potential for surface contamination by flow over or through the refuse. The amount of surface runoff on each of the five

alternative areas is indicated below. The values ranged from a high of 3.0 inches at the Northwest area to a low of 0.7 inches at the North Central site.

	Annual Surface Runoff (Inches/Year)	Potential Leachate Generation (Inches/Year)
1. Northwest	3.0	-5.9
2. North Central	0.7	-13.2
3. South Central	1.0	-16.7
4. Southeast	1.0	-18.4
5. Altamont	1.1	-16.7

A major potential impact of operating a sanitary landfill is the leaching of water through the landfill material resulting in groundwater contamination. To evaluate the leachate generation potential in each of the five alternate sites, a water balance study was made comparing the amount of average annual precipitation to the amount of potential evaporation. (Potential evaporation is the amount of water lost to the air as a result of climatic factors such as air temperature and hours of sunshine.) In the analysis, data from the following weather stations were used, Northwest site: Richmond; North Central: Martinez Fire Station; South Central and Altamont: Livermore; and Southeast: Antioch. The potential leachate generation shown above is the difference between the amount of precipitation and the amount of potential evaporation. The negative numbers indicate that more potential evaporation is available at each site than precipitation. In assessing the alternatives, the higher the negative number, the lower the potential for leachate generation. For example, the Southeast area (-18.4) has the lowest potential for leachate generation and associated leachate impacts.

The number of reservoirs or sensitive aquatic areas along San Pablo Bay indicate severe constraints for the placement of a landfill due to increased potential for contaminating surface water. The Northwest, North Central and Southeast areas all have major reservoirs or sensitive aquatic areas. The South Central and Altamont areas do not have reservoirs. The North Central and Southeast areas have lands subject to inundation from the 100-year flood.

Given these hydrologic constraints, the relative ranking of the five areas is as follows:

Least Constraints				Most Constraints
Altamont	South Central	Southeast	North Central	Northwest

8. Air Quality

Criteria

- Avoids areas with high dust potential due to excessvie winds
- Avoids areas with high odor potential due to lack of winds
- Avoids excessive hauling distances to reduce vehicle emissions

Discussion

The potential for dust generation problems is mainly determined by wind strength and the proximity of sensitive receptors such as residences. Assuming that a specific fill site can be found in each area that is not close to residences, all of the five alternative areas have a lesser potential for dust problems when compared to the Acme site. The South Central area would have the least dust problem potential, due to its relatively sheltered location.

The most important variable that determines odor potential (outside of the quality of the landfill operation) is the frequency of light winds. Under light winds odors are not diluted and travel to neighboring properties. The South Central area would have the highest potential for odor problems due to its sheltered location. The other 4 areas are all fairly exposed to winds through the Delta and mountain passes, and would have a lower frequency of calms. Thus, these 4 areas would be preferred locations in terms of this criterion.

Vehicle emissions for the Altamont, Southeast and South Central study areas would be much greater than for either the northwest or North Central study areas. While trip generation would be similar at each area, average trip length to the southern areas would be much longer.

Given these air quality constraints, the relative ranking of the five areas is as follows:

Least Constraints	Most Constraints
Northwest	South Central
North Central	Southeast
	Altamont

9. Flora and Fauna

Criteria

- Avoids areas of habitat for endangered plant and animal species
- Avoids aquatic habitats both freshwater and saltwater

Discussion

As the Altamont site is already in operation, it would be preferred, since existing wildlife habitats would not be affected. A tidal marsh habitat exists downstream from the North Central area and could potentially be affected by landfill activities.

In the Southeast area the endangered San Joaquin kit fox may be affected by landfill operations. The relatively large grassland habitat required by this species presents a high potential for conflict with landfill operations.

A relative ranking of the five potential sites with respect to flora and fauna is as follows:

Least Constraints			Most Constraints
Altamont	South Central Northwest	North Central	Southeast

10. Aesthetics

Criteria

- Avoids areas with high visibility from neighborhoods and major roads
- Avoids designated or proposed scenic highways

Discussion

All of the alternative areas have locations which would be inconspicuous and would not be aesthetically displeasing to passing motorists. Highway 4 in the North Central and Northwest areas is designated as a scenic route. The Cummings Skyway in the Northwest area is a minor scenic thoroughfare. The Southeast and South Central areas also have minor scenic thoroughfares. All of these scenic roadways (designated in the Scenic Routes Element of the Contra Costa County General Plan) present minor constraints to locating a landfill. The Altamont site is the only area which would not have aesthetic impacts because of the existing landfill operations.

A relative ranking based on aesthetics is as follows:

Least Constraints	Most Constraints
Altamont	Northwest North Central Southeast South Central

11. Energy

Criteria

- Avoid areas requiring excessive on-site energy use and expenditure of energy to transport wastes
- Avoid areas with high potential for future energy development

Discussion

The North Central site would be approximately equal to the current Acme operation in terms of energy for franchised collection and private haulers using the site. Use of the Northwest and South Central areas would require approximately 50 percent greater vehicular energy use, the Southeast would require 200 percent more vehicular energy use than for vehicles using Acme's current site. Use of Altamont for collection and trucks and private vehicles without a transfer station would require 250 percent more vehicular energy use than is currently needed.

All sites would require approximately the same or similar equipment that Acme is now using at its present landfill operations. It is possible, however, that Altamont would present economies of scale and not require complete duplication of landfill operation equipment.

Therefore, Altamont ranks highest in terms of energy savings for disposal equipment with the other 4 sites ranked lower and equally.

The Southeast alternate site has been an area of active exploration for oil and gas with a number of wells drilled and abandoned. Producing gas wells exist in the Brentwood Oil-Gas Field approximately 4 miles northwest of the area. A thermal spring is reported at Byron Hot Springs just southeast of the area perimeter. The Mount Diablo area has been designated by the California Energy Resources Conservation and Development Commission in 1976 as "lands valuable prospectively for geothermal resources." Locating a landfill in the southeast area would preclude future energy development.

The relative ranking of the five areas is as follows:

Least Constraints			Most Constraints
North Central	Altamont	Northwest South Central	Southeast

D. SUMMARY OF AREA SUITABILITY

Table 8 summarizes the suitability of the five identified areas for potential landfill use based upon the established criteria. The first five subject areas (Land Use; Traffic, Hauling Distance, Access; Regulatory and Policy Concerns; Public Health and Safety; Topography and Soils) are probably the most important criteria in this study in terms of selecting a general area for a landfill. Therefore, the summary discussion emphasizes these subjects in an attempt to identify the most suitable area.

In general, the location with the fewest constraints is the Altamont site. Use of this site would require the construction of a transfer station, probably in Central Contra Costa County, and amendments to the present permits which authorize solid wastes disposal at Altamont. The county's Solid Waste Management Plan (Draft) indicates that it is not economical to build a transfer station in the central county at this time, although it does state that a transfer station will be needed when the Acme site closes.

Of the areas within the Contra Costa County, the North Central Area appears to have the fewest constraints with respect to traffic, access, and hauling distance. A transfer station would not be necessary to use this area. However, the numerous jurisdictions in this area (U. S. Navy, City of Concord, City of Pittsburg) indicate that many land use, regulatory and policy constraints would be present.

The Northwest area also has relatively few constraints and would probably not require a transfer station, but this area does have constraints due to access and steep topography.

The South Central area is intermediate among the areas evaluated and would also not require a transfer station. Access, nearby residential areas and other agency jurisdictions present major constraints to this alternative.

The Southeast areas has the most constraints and would also require a transfer station. A major concern is vehicular access because of the long distances to major freeways along narrow two-lane roads.

In summary, the Altamont site appears to have the fewest constraints but would require construction of a transfer station. To thoroughly evaluate the feasibilty of using this site, further studies should be completed which would compare it with a specific site which would not require a transfer station, probably in the North Central Area.

Table 8 SUMMARY OF AREA SUITABILITY

	Least Constraints				Most Constraints
1. Land Use	Altamont	Northwest	Southeast	South Central	North Central
2. Traffic, Hauling Distance, Access	North Central	Altamont	Northwest	South Central	Southeast
3. Regulatory and Policy Concerns	Altamont	Southeast Northwest	South Central	North Central	
4. Public Health and Safety	North Central Altamont				South Central Southeast Northwest
5. Topography and Soils	South Central	Southeast	North Central	Altamont	Northwest
6. Geology and Seismicity	Altamont		South Central		North Central Northwest Southeast
7. Groundwater and Surface Water	Altamont	South Central	Southeast	North Central	Northwest
8. Air Quality	Northwest North Central				South Central Southeast Altamont
9. Flora and Fauna	Altamont		South Central Northwest	North Central	Southeast
10. Aesthetics	Altamont				Northwest North Central Southeast South Central
11. Energy	North Central	Altamont	Northwest South Central		Southeast

V UNAVOIDABLE ADVERSE IMPACTS

The proposed project (Alternative A) and Alternatives B, C, D, and E would have some unavoidable adverse impacts which cannot be mitigated to a level of insignificance. The following summary indicates the impacts which are associated with each alternative.

Alternative A

- Reduction of local habitat and wildlife populations
- Loss of potential for local wetlands restoration on about 200 acres

Alternative B

- Loss of potential for local wetlands restoration in about 100 acres

Alternative C

- Odor nuisance with the Vine Hill neighborhood during certain climatic conditions (short-term, occasional, impact)
- Possible conflict with FAA regulations prohibiting sanitary landfill operations within 10,000 feet of runways
- Possible conflict with California regulations prohibiting Class I wastes within 2000 feet of residences
- Loss of potentially restorable local wetlands on about 25 acres

VI LOCAL SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

Timing of the Project

The Acme landfill expansion has been proposed at this time because of the immediate need for additional landfill capacity to dispose of solid waste in Central Contra Costa County. The existing site is expected to reach capacity in 1983. Therefore, an expansion of the existing site must be approved or a suitable site identified as soon as possible.

Future Land Uses

A discussion of future land uses must be limited to those alternatives which propose specific sites. Alternatives A, B, and C involve specific parcels owned by Acme. No specific sites have been identified for Alternatives D or E. The following future land uses would be the result of implementing the indicated alternative:

Alternative A

- Loss of potential to restore local wetlands habitat of about 200 acres.
- Gain of land capability for possible industrial, recreational or open space uses on about 200 acres due to the raised elevation of the site.

Alternative B

- Loss of potentially restorable local wetlands habitat of about 100 acres
- Gain of land capability for possible industrial, recreational or open space uses on about 100 acres due to the raised elevation of the site.

Alternative C

- Loss of potentially restorable local wetland habitat of about 25 acres
- Gain of land capability for possible industrial, recreational or open space uses on about 25 acres due to the raised elevations of the site.

Long-Term Risks to Health and Safety

The long-term risks of Alternatives A, B, and C relate directly to the high concentration of wastes and hazardous substances in one location. Each alternative presents significant long-term risks to the health and safety of those individuals in the vicinity of the identified sites. However, the recommended mitigation measures would effectively reduce those risks and, at the same time, would reduce the immediate health and safety hazards which could result by not providing additional landfill capacity.

VII SIGNIFICANT IRREVERSIBLE CHANGES IN THE ENVIRONMENT

The proposed project and alternatives would result in some irreversible changes to the environment. Changes are indicated with the associated alternative.

Alternative A

- Conversion of about 200 acres of seasonal wetland and lowland grassland habitat to upland grassland within 8 years
- Disposal of about 1500 tons (1980 generation) of solids waste materials per day for 6 years with the resulting loss of potential, uses, material, and energy recovery.

Alternative B

- Conversion of 100 acres of seasonal wetland and lowland grassland habitat to upland grassland within 4 years
- Disposal of about 1500 tons per day (1980 generation rate) of solid waste materials per day for 3 years with the resulting loss of potential uses, material, and energy recovery

Alternative C

- Conversion of about 25 acres of seasonal wetland and lowland grassland habitat to upland grassland within 3 years
- Disposal of about 1500 TPD (1980 generation rates) solid waste materials per day for 2.5 years with the resulting loss of potential uses, material, and energy recovery.

VIII GROWTH-INDUCING IMPACTS

Alternatives A, B, and C do not have direct growth-inducing impacts. Each one would continue operations of an existing solid waste disposal facility for a relatively short period of time. Of these three alternatives, A provides the longest continuation of six years to 1989. Alternatives B and C provide for shorter disposal operation time. The expansion would not have growth incentives because rapid population growth would decrease the life expectancy of the site and increase the need for a new landfill. However, Alternatives A, B and C, by continuing operations would eliminate the immediate constraint of an insufficient capacity for solid waste. Therefore, the provision of temporary capacity would allow for growth and may be considered indirectly growth-inducing.

Alternative D is intended to provide a system for recovering resources from the solid waste stream to reduce the volume of waste going to landfills. This alternative attempts a long-range solution to the problem of solid waste management. Implementation of this alternative would not eliminate the need for a landfill nor would it provide a complete solution to the solid waste problem. Therefore it cannot be considered growth-inducing.

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	Robin Mooney	Civil Engineering	8 Years	Federal REview
B.	CONTRA COSTA COUNTY PLANNING DEPARTMENT			
	Charles Zahn	Urban Planning	24 Years	Contract Administration and Interagency Coordination
	Rube Warren	Urban Planning	2 Years	EIR Coordination
C.	CONTRA COSTA COUNTY HEALTH SERVICES DEPARTMENT (Environmental Health Services)			
	William Treadwell	Environmental Health	25 Years	Health Program Coordination
D.	CONTRA COSTA COUNTY PUBLIC WORKS DEPARTMENT (Environmental Control Division)			
	Paul Kilkenny	Civil Engineering	29 Years	Public Works Dept. Program Coordination
	David Okita	Civil Engineering	4 Years	Solid Waste Program Coordination
E.	TORREY & TORREY INC.			
	I. P. Torrey	Urban Planning	20 Years	Contract Administration Project Supervision
	G. Edelbrock	Environmental Planning Biology	6 Years	Project Manager
	M. Gale	Environmental Planning Landscape Architecture	9 Years	Environmental Analysis
	G. Kelley	Environmental Planning	5 Years	Environmental Analysis
	N. Spersrud	Graphics	6 Years	Graphics
	L. Lancaster	Report Preparation	6 Years	Typing

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	Name	Professional Discipline	Exper.	Role in Preparing EIR/EIS
F.	BARBARA WITTE INC.			
	Barbara Witte	Solid Waste Management	9 Years	Solid Waste Management Environmental Analysis, Editing
G.	WATER RESOURCES CONSULTANTS			
	Michael McMillan	Hydrology	10 years	Hydrology
H.	KLEINFELDER AND ASSOCIATES			
	Richard Wary	Geotech. Engineering	8 Years	Soils, Geology, Seismicity
	Dean Richeson	Geology	9 Years	Soils, Geology, Seismicity
	David Mathy	Geotech. Engineering	5 Years	Soils, Geology, Seismicity
I.	DONALD BALLANTI			
	Donald Ballanti	Meteorology	9 Years	Air Quality
J.	GOODRICH CONSULTING GROUP			
	D. K. Goodrich	Traffic Engineering	26 Years	Traffic
	M. Crane	Traffic Engineering	10 Years	Traffic
K.	REED V. SCHMIDT CONSULTING ECONOMIST			
	Reed V. Schmidt	Economics	10 Years	Economics

XI PUBLIC INVOLVEMENT

Public involvement in the review of the Acme Landfill project has been (or will be) solicited by the Corps of Engineers and Contra Costa County through the actions described below. In combination, they provide notices to agencies, organizations, and concerned individuals to participate in the review process through national, state, and local means of notification.

December 19, 1978	Public Notice No. 12517-10 issued by Corps of Engineers for Acme's first application (which was denied on December 12, 1980).
July 2, 1981	Notice of Intent to prepare a Draft EIS for Acme's current application was published in the Federal Register by the Corps of Engineers to invite participation in the scoping process.
July 8, 1982	Notice of Preparation of a Draft EIR was issued by Contra Costa County inviting participation in the scoping process. Copies were sent to parties on the County's mailing list for the project. Notice of Intent to Prepare a Draft EIR was mailed by the Corps of Engineers to agencies, organizations, and individuals.
July 22, 1981	Joint Corps of Engineers/Contra Costa County public scoping meeting was held in Martinez.
August 31, 1981	Contra Costa County issued a revised Notice of Preparation, inviting additional comments, following the public scoping meeting.
August 1982	The Draft EIR/EIS will be circulated (See Table of Contents for Distribution List). A Notice of Availability of the Draft EIR/EIS will be published in the Federal Register by the Environmental Protection Agency. Concurrently a public notice for Acme's current application will be sent by the Corps of Engineers to all persons on its mailing list. The County will issue a Notice of Completion, which will be acknowledged in the California EIR Monitor. The County will schedule a public hearing(s) on the EIR/EIS. The hearing will be noticed in several County newspapers.

XII. DRAFT EIR/EIS DISTRIBUTION LIST

The following list has been compiled from Corps of Engineers, State of California, and Contra Costa County notification lists and response and request files for use in distributing the Draft EIR/EIS for its review. Agencies, firms and organizations on the list are to be sent copies of the draft report by mail, clearinghouse distribution, hand delivery, or other direct means.

A. Federal Agencies

U. S. Department of the Army
Headquarters
Washington, D. C.

U. S. Army Engineer Division
South Pacific
San Francisco, CA

U. S. Army Corps of Engineers
Sacramento District
Sacramento, CA

Defense Technical Information Center
Alexandria, VA

U. S. Environmental Protection Agency
Office of Federal Activities
Washington, D. C.

U. S. Environmental Protection Agency
Region IX
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U. S. Department of Health
and Human Services
San Francisco, CA

U. S. Department of Housing and Urban
Urban Development
San Francisco, CA

U S. Fish & Wildlife Service
Division of Ecological Services
Sacramento, CA

Federal Aviation Administration
Airports District Office
Burlingame, CA

U. S. Department of Transportation
San Francisco, CA

National Marine Fisheries Service
Tiburon, CA

National Park Service
Interagency Archaeological Services
San Francisco, CA

U. S. Navy
Concord Naval Weapons Station
Concord, CA

B. State Agencies

Air Resources Board
Sacramento, CA

Department of Conservation
Sacramento, CA

Department of Fish & Game
Yountville, CA

Department of Health Services
Sacramento, CA

Division of Mines & Geology
Sacramento, CA

Department of Transportation, District 4
San Francisco, CA

Office of Planning & Research
Sacramento, CA

Solid Waste Management Board
Sacramento, CA

Office of Historic Preservation
Sacramento, CA

Department of Housing
and Community Development
San Francisco, CA

Department of Water Resources
Sacramento, CA

California Archaeological Inventory
Rohnert Park, CA

C. Regional Agencies

Association of Bay Area Governments
Berkeley, CA

Bay Area Air Quality Management Dist.
San Francisco, CA

Regional Water Quality Control Board
Oakland, CA

Regional Water Quality Control Board
Sacramento, CA

San Francisco Bay Conservation
and Development Commission
San Francisco, CA

D. Contra Costa County Agencies

Board of Supervisors

Health Services Department

Community Services Department

County Administrator

County Counsel

County Planning Commission

Solid Waste Commission

Public Works Department

Library (system)

Office of Emergency Services

E. Other Local Agencies

Contra Costa County
Local Agency Formation Commission
Martinez, CA

Contra Costa County
Consolidated Fire District
Pleasant Hill, CA

Contra Costa County Resources
Conservation District
Clayton, CA

Contra Costa County Flood Control Dist,
Martinez, CA

Contra Costa Mosquito Abatement Dist.
Concord, CA

Contra Costa Water District
Concord, CA

Mountain View Sanitary District
Martinez, CA

Richmond Library
Richmond, CA

Central Contra Costa County
Sanitary District
Walnut Creek, CA

Contra Costa Mosquito Abatement District
Concord, CA

Suisun Resources Conservation Dist.
Redwood City, CA

Alameda Co. Solid Waste Mgmt. Auth.
Hayward, CA

F. Cities

Antioch

Brentwood

Concord

Danville

Hercules

Lafayette

Martinez

Pleasant Hill

Pinole

Pittsburg

Richmond

Benicia

G. Organizations

Audubon Society, Mt. Diablo Chapter
Walnut Creek, CA

California Waterfowl Association
Menlo Park, CA

Citizens for a Better Environment
San Francisco, CA

East Vine Hill Improvement Assn.
Martinez, CA

National Solid Waste Management Assn.
Washington, D.C.

Save San Francisco Bay Association
Berkeley, CA

Sierra Club, San Francisco Bay Chapter
Oakland, CA

Vine Hill Improvement Association
Martinez, CA

Vine Hill Neighborhood Preservation
Committee
Martinez, CA

H. Industries

Acme Fill Corporation
Martinez, CA

IT Corporation
Martinez, CA

Shell Oil Company
Martinez, CA

Southern Pacific Pipe Line, Inc.
Concord, CA

Martinez Auto Dismantlers
Martinez, CA

Oakland Scavanger Co. (Altamont landfill)
Oakland, CA

Pacific Gas & Electric Company
Concord, CA

Southern Pacific Transportation Co.
San Francisco, CA

Tosco Corporation
Martinez, CA

Landsea Corporation
Martinez, CA

I. Others

Edgar Holton Accountancy Corporation
San Francisco, CA

Lafayette Realty and Development Co.
Lafayette, CA

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